

Amateur Radio

February 1996

Volume 64 No 2



Journal of the Wireless Institute of Australia



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- Understanding Our New Licence Conditions
- Review of the IC-2350H Dual Band FM Transceiver
- Television 110 Years Ago!

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Cover

Taken at the Mount Gambier South East Radio Group Convention, June 1995, this picture represents about 90% of the active 3 cm population in Australia. From left: Chris VK5MC, Alan VK4XPD, David VK5KK, Russell VK3ZQB, Trevor VK5NC, and Roger VK5NY who shares the 3 cm World Distance Record with Wal VK6KZ. All gear, DB6NT narrow-band transverters.

(Photo by Wally VK4DO using VK5NC's camera)

Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs, that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

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Editor's Comment

Apathy?

Page 56 of the December 1995 issue of *Amateur Radio* magazine was wholly occupied by our Readership Survey. The purpose of the survey is to establish how best we can shape **your** magazine to suit **you**, the members of the WIA. We have been rather surprised to find so far (as I write this on 9 January 1996) the response to the survey has only come from about four percent of WIA members.

Thank you to the keen readers who have taken the trouble to respond, but we feel that many more of you would like to help us (and you) by giving us a little more guidance. Probably (what with the holiday season and all!) there just hasn't been time to sit down and concentrate on circling all the points listed. You only need to mark 18 of them but they are chosen from nearly 50.

As I write this, there is still almost a week until the closing date of 14 January arrives. That's not really long enough, is it? So we are going to extend the survey duration by another few weeks, to 28 February.

This is one of those things that only **you** can do. It just won't "be all right on the day if George does it"! Bill and Joe and Ken and Betty can all have a go at it too. Please?

You could win a year's free membership and the magazine will better reflect your ideas about how it should be.

Of course, there is another possible reason for the small response to date. Could it be that you are all so satisfied with *Amateur Radio* as it is, that you don't want to suggest any changes at all? Or are we hopelessly lost in a fog of self-deception?

Dispel the fog and tell us what we need to know. Radio amateurs do have a reputation for being apathetic about many things, but often, once stirred, we leap into belated action. Let's do it!

Bill Rice VK3ABP
Editor
ar

WIA News

Heard Island Update

The aborted 1995 DXpedition to Heard Island (see *WIA News*, January), initially postponed tentatively to November this year, is now targeting a time frame of December 1996 to February 1997.

Recent communication from Peter Casier ON6TT advised the changed time frame. Peter and Bob Schneider KK6EK have taken over management of the DXpedition from Ralph Fedor KOIR.

A vessel is actively being sought to transport the DXpeditioners and

their equipment to and from the island, which lies at 53 degrees S — 75 degrees E, between Perth in Western Australia and Enderby Land in Antarctica. It is near the top of the "most wanted countries" among the world's HF band DXers.

Peter expected the number of amateurs to join the expedition to be settled by the time this is published.

A major goal of the expedition is to implement new techniques for using available high technology to enhance communications from

remote sites, to document and monitor local marine life, and to conduct radio propagation experiments.

Apart from working the DX pileups, the expeditioners plan to send data and information from Heard Island via satellite, to be distributed world-wide via the Internet, including daily QSLing. A book, a documentary film and major newspaper and magazine articles are planned as a follow-up to the expedition.

WIA Divisions

The WIA consists of seven autonomous State Divisions. Each member of the WIA is a member of a Division, usually in their residential State or Territory, and each Division looks after amateur radio affairs within its area.

Division	Address	Officers		Weekly News Broadcasts	1996 Fees	
VK1	ACT Division GPO Box 600 Canberra ACT 2601	President Secretary Treasurer	Rob Apathy Len Jones Alex Colquhitt	VK1KRA VK1NLJ VK1AC	3.570 MHz LSB, 146.900 MHz FM each Wednesday evening commencing at 8.00 pm local time. The broadcast text is available on packet, on internet audio amateur misc newsgroups, and on the VK1 Home Page http://email.nla.gov.au/~cmakin/wisact.html	(F) \$70.00 (G) \$56.00 (X) \$42.00
VK2	NSW Division 109 Wigram Street Parramatta NSW (PO Box 1066 Parramatta 2124) Phone (02) 689 2417 Freecall 1800 817 644 Fax (02) 633 1525	President Secretary Treasurer (Office hours Mon-Fri 11.00-14.00 Mon 1900-2100) Sat 1000-1300)	Michael Corbin Eric Fossey Eric Van De Weyer Mon-Fri 11.00-14.00 Mon 1900-2100 Sat 1000-1300)	VK2YC VK2EYF VK2KUR	From VK2W1 1.845, 3.595, 7.146*, 10.125, 24.950, 28.320, 29.120, 52.120, 52.525, 144.150, 147.000, 438.525, 1281.750 (*morning only) with relays to some of 14.160, 18.120, 21.170, 584.750 ATV sound. Many country regions relay on 2m or 70 cm repeaters. Sunday 1000 and 1930. Highlights included in VK2AWX Newcastle news, Monday 1930 on 3.593 plus 10 m, 2m, 70 cm, 23 cm. The broadcast text is available on packet.	(F) \$66.75 (G) \$53.40 (X) \$38.75
VK3	Victorian Division 40G Victory Boulevard Ashburton VIC 3147 Phone (03) 9885 9261 Fax (03) 9885 9298	President Secretary Treasurer (Office hours Tue & Thur 0830-1530)	Jim Linton Barry Wilton Rob Hailey Tue & Thur 0830-1530)	VK3PC VK3XV VK3NC	VK3BW1 broadcasts on the 1st and 3rd Sunday of the month, starts (F) 10.30 am. Primary frequencies 3.615 LSB, 7.085 USB, and (G) \$58.00 FM(R)s 146.700 Mt Dandenong, 147.250 Mt Macedon, 147.225 (X) \$44.00 Mt Baw Baw, and 2 m FM(R)s VK3RMA, VK3RSH, VK3ROW. 70 cm FM(R)s VK3ROU and VK3RGL. Major news under call VK3W1 on Victorian packet BBS.	(F) \$72.00 (G) \$58.00 (X) \$44.00
VK4	Queensland Division GPO Box 638 Brisbane QLD 4001 Phone (074) 96 4714	President Secretary Treasurer	Geoff Sanders John Stevens John Presotto	VK4KEF VK4AFL VK4WX	1.825 MHz SSB, 3.605 MHz SSB, 7.118 MHz SSB, 14.342 MHz (F) \$72.00 SSB, 28.400 MHz SSB, 29.220 MHz FM, 52.525 MHz FM, 146.700 (G) \$58.00 MHz FM, 147.000 MHz FM, 438.525 MHz (Brisbane only), regional (X) \$44.00 VHF/UHF repeaters at 0900 hrs Sunday. Repeated on 3.605 MHz SSB & 147.000 MHz FM, regional VHF/UHF repeaters at 1930 hrs EAST Monday. Broadcast news in text form on packet under WIAQ@VKNET.	(F) \$72.00 (G) \$58.00 (X) \$44.00
VK5	South Australian Division 34 West Thebarton Road Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone (08) 352 3428	President Secretary Treasurer	Garry Herden Maurie Hooper Charles McEachern	VK5ZK VK5EA VK5DKD	1827 kHz AM, 3.550 MHz LSB, 7.095 AM, 14.175 USB, 28.470 USB, 53.100 FM, 147.000 FM Adelaide, 146.700 FM Mt North, 146.800 FM Millicura, 146.925 FM Barossa Valley, 146.900 FM South East, 146.925 FM Central North, 147.625 FM Gawler, 438.425 FM Barossa Valley, 438.475 FM Adelaide North, ATV Ch 35 579.250 Adelaide, (NT) 3.555 USB, 7.085 USB, 10.125 USB, 146.700 FM, 0900 hrs Sunday	(F) \$72.00 (G) \$58.00 (X) \$44.00
VK6	West Australian Division PO Box 10 West Perth WA 6872 Phone (09) 351 8873	President Secretary Treasurer	Cliff Bastin Mark Bastin Bruce Hedland-Thomas	VK6LZ VK6OO	146.700 MHz FM(R) Perth, at 0930 hrs Sunday, relayed on 1.825, 3.560(F) 7.075, 14.116, 14.175, 21.185, 29.680 FM, 50.150 and 438.525 MHz FM (G) \$58.00 Country relays 3.582, 147.350(F) Busselton and 146.900(F) Mt (X) \$32.75 William (Bunbury). Broadcast repeated on 146.700 at 1900 hrs Sunday, relayed on 1.865, 3.583 and 438.525 MHz; country relays on 146.350 and 146.900 MHz.	(F) \$60.75 (G) \$48.60 (X) \$32.75
VK7	Tasmanian Division 52 Connaught Crescent West Launceston TAS 7250 Phone (003) 31 9808	President Secretary Treasurer	Andrew Dixon Robin Harwood Terry Ives	VK7GL VK7RH VK7ZTI	146.700 MHz FM (VK7RHT) at 0930 hrs Sunday relayed on 147.000 (VK7RAA), 146.725 (VK7RNE), 146.625 (VK7RMD), 3.570, 7.060, 14.130, 52.100, 144.150 (Hobart) Repeated Tues 3.590 at 1930 hrs.	(F) \$72.00 (G) \$58.00 (X) \$44.00
VK8	(Northern Territory is part of the VK5 Division and relays broadcasts from VK5 as shown received on 14 or 28 MHz).					
Note: All times are local. All frequencies MHz.				Membership Grades Full (F) Pension (G) Needy (G) Student (S) Non receipt of AR (X)		Three-year membership available to (F) (G) (X) grades at fee x 3 times.

■ Regulations

Understanding Our New Licence Conditions

John Martin VK3KWA, Chairman of the Federal Technical Advisory Committee (FTAC), clarifies the new licence conditions.*

Transmission Modes

1. Introduction

Our new licence conditions are set out in a series of Technical Licence Specifications (TLS) published by the SMA. Since the TLS came into force, there has been a great deal of uncertainty about which modes we are permitted to use.

The mode designations used in the TLS are very precise, but they can also be hard to understand. Each TLS includes an explanation but it can take some thought to translate this into familiar language.

For example, consider the mode 4K00J3E. It means "Using a maximum bandwidth of 4 kHz, amplitude modulation with single sideband and suppressed carrier, the modulating signal being a single channel containing analog information in the form of telephony." It may not be immediately obvious that this refers to plain, everyday SSB.

The following is a description of the mode designators and an explanation of each mode authorised for use by amateur stations. It is not exactly bedtime reading but, hopefully, it will be of help in explaining the regulations in practical terms.

2. Mode Designations

2.1 Bandwidth

The designator begins with (usually) four characters which

denote the occupied bandwidth of the signal (referred to in SMA documents as the "necessary bandwidth"). These characters include numbers and the letter "H", "K", or "M", denoting Hertz (Hz), kHz (kilohertz), or MHz (Megahertz). For example, 200H = 200 Hz; 1K12 = 1.12 kHz; and 6M25 = 6.25 MHz.

2.2 Modulation Type

Next follows a letter which denotes the type of modulation. These letters are:

- A Double sideband, full carrier (AM) or suppressed carrier (DSB).
- C Vestigial sideband (an AM signal with one sideband occupying much less bandwidth than the other).
- J Single sideband, suppressed carrier ("normal" SSB transmission).
- H Single sideband, full carrier.
- R Single sideband, reduced or variable carrier.
- B Independent sideband (ie two sidebands containing different modulating information).
- F Frequency modulation.
- G Phase modulation.
- P Pulse modulation.

2.3 Nature of Modulating Signal

The next symbol is a number which refers to the type of signal which is used to modulate the carrier:

- 0 No modulation.
- 1 Single channel, quantised or digital information, no subcarrier.

(This includes CW or digital data transmitted by on-off keying or frequency shift keying of the carrier).

- 2 Single channel, quantised or digital information, using a subcarrier. (This includes RTTY or packet transmission using a frequency shifted audio tone from a TNC).
- 3 Single channel, analog information. (Analog information includes all speech and video modes).
- 8 Two or more channels, analog information.

2.4 Type of Modulating Information

The next symbol is a letter which describes the modulating signal:

- N No information.
- A Telegraphy (Morse keying), for aural reception.
- B Telegraphy, for automatic reception (eg by computer).
- C Facsimile (fax).
- D Data, telemetry, telecommand. (This includes amateur digital modes such as RTTY and packet.)
- E Telephony (speech).
- F Television (fast scan or SSTV).
- W Combination of any of the above.

2.5 Supplementary Symbols

The mode designation described above may be followed by an extra symbol:

- K Commercial quality sound with the use of frequency inversion or band splitting.
- M Monochrome.
- N Colour.

A final letter can be added to denote the type of multiplexing used – usually "N" (no multiplexing).

2.6 Summary

The easiest way to understand these designations is to leave out the initial bandwidth characters, and any supplementary characters, and concentrate on the three main characters – A1A, J3E, F2D, etc. These can be put in a table as follows:

First Character Type of Transmitter Information	Second Character Type of Modulation	Third Character Modulating
A AM or CW	1 Direct keying	A, B Morse
J, H, R SSB	2 Keyed or shifted tone	C Fax
F, G FM	3 Voice, video etc.	D Data
B ISB	8 2 or more channels	E Voice
C VSB		F ATV, SSTV
P Pulse		

Note that J, H and R all refer to SSB, but in practice we are only interested in the J modes (SSB with suppressed carrier). G (phase modulation) is treated as FM because the two modes are very similar. Many amateur "FM" radios actually use phase modulation.

To get all the possible combinations, we would need a three-dimensional spreadsheet. In practice, some combinations are not possible. For example, J1 mode would be on-off keying of a suppressed carrier – zero transmitter output no matter what you did!

Other combinations are possible but are not used. For example, vestigial sideband (VSB) is only used for ATV (C3F). C3E would be an AM voice transmission with one sideband occupying less bandwidth than the other – it could be done, but no-one would bother.

Other modes – such as ISB and pulse – are not generally used by amateurs due to lack of suitable equipment.

3. Necessary Bandwidths

Looking now at permitted bandwidths, you will see that there are several standard bandwidth limits. For example, the permitted bandwidth for CW is given as 200 Hz (200HA1A). In theory, a CW carrier occupies no bandwidth at all, but sidebands are produced when it is keyed. The 200 Hz bandwidth is quite adequate for even the fastest keying. If a CW station occupies more than 200 Hz it is usually due to equipment faults such as key clicks.

The bandwidth limit for FSK modes is 1.12 kHz. As with CW, the bandwidth of an FSK signal is determined by the amount of frequency shift and the data rate.

There are several different bandwidth limits for voice modes. The limit for SSB is 4 kHz, which should be no problem because most SSB transmitters use filters with bandwidths of around 2.4 kHz. This, of course, assumes that the transmitter is properly adjusted and is not being driven into distortion – if it is, the transmitted signal can finish up occupying far more than the nominal 2.4 kHz bandwidth.

The bandwidth limit for AM is 6 kHz, ie a maximum audio bandwidth of 3 kHz in each sideband. The audio response of the modulator therefore needs to cut off above 3 kHz. For FM, the limit is 6 kHz on bands below 29 MHz, and 16 kHz above 29 MHz. Note that the FM bandwidth of most HF radios is far more than 6 kHz, therefore they cannot be used legally for FM below 29 MHz.

For other modes, the bandwidth limits are described in the following section.

4. Permitted Modes

Now to a detailed description of each mode. The following list includes all of the modes permitted for amateur use on bands below 30 MHz.

4.1 1A / 1B Modes: CW Transmission

All 1A and 1B modes use a single carrier which is either keyed on and off (A1) or shifted back and forth between two frequencies (F1).

200HA1A On-off keyed CW. Conventional Morse transmission, also known as ICW (Interrupted Continuous Wave). The carrier is keyed on and off by a hand key or keyer. Bandwidth is determined by the keying rate, maximum permitted bandwidth 200 Hz.

200HA1B As above, for automatic reception. Applicable to high-speed machine-sent CW for reception by a computer.

1K12F1 A Frequency Shift Keying (FSK). Keying causes the carrier frequency to shift up or down. Bandwidth is determined by the shift and the keying rate, maximum permitted bandwidth 1.12 kHz. This mode is used by some propagation beacons because the carrier remains on air continuously. All normal amateur CW operation is A1A. Most transceivers do not have facilities for FSK keying.

1K12FIB As above, for automatic reception.

1K12G1B As above, but using phase shift keying.

4.2 2A / 2B Modes: Tone Modulated CW Transmission

With all 2A and 2B modes, the transmitter is modulated by a subcarrier or audio tone which is fed into the microphone input. Keying is applied to this tone rather than to the carrier. If the tone is keyed on and off, the mode is referred to as MCW (Modulated CW). If the keying causes a shift in the tone frequency, it is called AFSK (Audio Frequency Shift Keying).

6K00A2A MCW (Modulated CW) – AM transmitter. An AM transmitter modulated by an audio tone which is keyed on and off by a Morse key or keyer. Bandwidth is twice the highest tone frequency, maximum 6 kHz. Not normally used by amateurs. Time "pips" sent by WWV or broadcast stations are MCW.

6K00A2B As above, for automatic reception.

6K00F2A MCW (Modulated CW) – FM transmitter. An FM transmitter modulated by a keyed audio tone, as for A2A. Bandwidth is roughly the amount of frequency deviation plus twice the highest modulating frequency; maximum permitted below 30 MHz is 6 kHz. Not normally used on HF, but Morse practice beacons on VHF FM channels use F2A with a bandwidth of about 16 kHz.

6K00F2B As above, but for automatic reception.

6K00G2A As above, but using phase shift keying.

6K00G2B As above, but for automatic reception.

4.3 1D/2D Modes: Digital Data

The 1D and 2D modes are the digital equivalents of 1A and 2A described above, except that the modulating signal is digital data – from a computer, terminal unit or TNC – rather than Morse keying. With the 1D modes, the carrier is keyed directly. With the 2D modes, the keying is applied to a tone generator which in turn modulates the transmitter.

1K12F1D Frequency shift keying. Digital data causes the carrier frequency to shift up or down. Bandwidth is determined by the frequency shift and the keying rate, maximum permitted bandwidth 1.12 kHz. As used for amateur RTTY, packet and other digital modes on HF, the most common shifts being 170 Hz and 850 Hz. Most transmitters cannot generate FSK as such – some have data input sockets but these are usually audio rather than digital inputs. See J2D below.

1K12G1D As above, but using phase shift keying.

1K12J2D Tone Modulated SSB transmitter. An SSB transmitter modulated by a keyed or frequency shifted audio tone from an RTTY terminal unit or a packet TNC. The tone is fed into the microphone socket, although some radios have a separate rear panel socket for AFSK tone input. Bandwidth is determined by the amount of frequency shift and the data rate, maximum bandwidth 1.12 kHz. The normal method used to generate FSK signals on HF without the need to apply direct FSK keying to the carrier oscillator. Because the carrier is suppressed, the output of the transmitter is effectively a single frequency shifted carrier and is indistinguishable from F1D mode.

6K00A2D Tone Modulated AM transmitter. An AM transmitter modulated by an audio tone which is keyed by digital data. Not normally used by amateurs.

6K00F2D Tone Modulated FM transmitter. An FM transmitter modulated by an audio tone from an RTTY terminal unit or packet TNC. Bandwidth is the amount of deviation

plus twice the highest tone frequency, maximum 6 kHz below 29 MHz. Not used on HF because F1D or J2D are far more efficient. Most HF transceivers in FM mode produce far more than the 6 kHz maximum bandwidth and will not be legal below 29 MHz. With tone frequencies up to 2 kHz, even a deviation of ± 2.5 kHz will produce an occupied bandwidth of about 9 kHz. Wider bandwidths are permitted above 30 MHz and F2D is normally used for RTTY and packet operation on VHF FM channels.

6K00G2D As above, but using phase modulation.

1K12F2D Included in this list because it appears in the SMA licence conditions, but it appears to be a misprint for either 1K12F1D or 6K00F2D. Application of digitally keyed audio tones to an FM transmitter would result in a bandwidth far greater than 1.12 kHz.

4.4 3E Modes: Voice Transmission

The 3E modes are the modes used for speech.

8K00A3E Standard AM (double sideband with full carrier) or DSB (double sideband suppressed carrier) voice transmission. Bandwidth is twice the highest modulating frequency, maximum 8 kHz, (maximum modulating frequency 4 kHz).

4K00A3EKN As above, for narrow band voice modulation (NBVM).

4K00J3E SSB suppressed carrier voice transmission. Bandwidth is usually less than 3 kHz, maximum permitted 4 kHz.

2K00J3EKN As above, for narrow band voice modulation (NBVM).

4K00R3E Single sideband with reduced carrier. Not normally used by anyone – except that, unless an SSB transmitter has infinite carrier suppression, most SSB signals are really “reduced carrier” and not “suppressed carrier”.

2K00R3EKN As above, for narrow band voice modulation (NBVM).

4K00H3E Single sideband full carrier transmission. Compatible with normal AM receivers and used by some short-wave broadcasters to reduce adjacent channel inter-

ference. No intentional use on amateur bands. Some amateur transceivers, when AM mode is selected, produce H3E rather than standard DSB AM (A3E).

2K00H3EKN As above, for narrow band voice modulation (NBVM).

6K00F3E FM voice transmission. Bandwidth is roughly the deviation plus twice the highest modulating frequency. Most multimode HF radios occupy far more than 6 kHz bandwidth in FM mode and cannot, therefore, be used legally for FM below 29 MHz. See comments on F2D above.

6K00G3E As above but using phase modulation.

16K0F3E FM voice, maximum bandwidth 16 kHz. May be used only on bands above 29 MHz.

16K0G3E As above but using phase modulation.

4.5 3C Modes: Facsimile Transmission

The “3C” modes use analog modulating information in the form of picture information rather than speech. The modulating signal is normally an audio tone, or subcarrier, which is modulated by the video information. As with voice modes, the letter “A”, “J”, “F”, etc indicates the type of transmitter the modulation is applied to.

6K00A3C An AM transmitter modulated by picture information. Not generally used by amateur stations.

3K00J3C An SSB transmitter modulated by picture information. Commonly used for amateur fax transmissions on all bands.

3K00R3C As above but with reduced rather than suppressed carrier.

3K00H3C As above but with full carrier.

6K00F3C An FM transmitter modulated by picture information. Not used on HF, but commonly used with up to 16 kHz bandwidth (16K0F3C) for amateur fax transmissions on VHF FM channels.

6K00G3C As above but using phase modulation.

4.6 3F Modes: Television

The “3F” modes use analog modulation in the form of television

signals. This group of modes includes narrow band or slow scan television as well as fast scan television. For slow scan television, the modulating signal is normally an audio tone, or subcarrier, which is modulated by the video information.

6K00A3F AM transmitter modulated by video information.

3K00J3F SSB transmitter modulated by video information.

6K00F3F FM transmitter modulated by video information.

6K00G3F PM (phase modulated) transmitter modulated by video information.

4.7 B8 Modes: Independent Sideband

The initial letter "B" indicates two independent sidebands, and the "8" numeral means a combination of different modes. These modes consist of two sidebands which contain different modulating information, such as two separate voice channels, or a voice channel plus a digital or video channel. Some use on HF by commercial or military services. No known amateur use due to lack of suitable equipment.

8K00B8E Independent sideband signal consisting of two separate voice channels, maximum bandwidth of each channel is 4 kHz.

8K00B8W Independent sideband signal carrying two different types of modulating signal, eg voice in one sideband and a fax image in the other.

5. Modes Available Above 30 MHz

On bands below 30 MHz, all amateur stations are restricted to the modes listed in their TLS. The same applies to Novice, and Novice Limited, stations above 30 MHz.

For other licence classes, the TLS does not contain a list of permitted modes for bands above 30 MHz. This means that any modes may be used, unless the TLS specifically states otherwise. For Unrestricted, Intermediate and Limited licensees, there are only two mode restrictions above 30 MHz. One is the restrictions applying in the 50 MHz DX window in the eastern states. The other is the requirement that wideband modes

(pulse, fast-scan television, spread spectrum, etc) are not permitted below 420 MHz. Stations using wideband modes may not cause interference to other services or inhibit other amateur licensees from using the band.

Examples of modes available on 420 MHz and above include the following:

5.1 3F Modes: Fast Scan Television

12M50A3F AM television with both sidebands transmitted. Bandwidth of each video sideband is usually about 5 MHz, but total occupied bandwidth also includes twice the bandwidth and frequency of any audio subcarriers. The letters "M" or "N" could be added to the designator to specify monochrome or colour.

6M25C3F 6.25 MHz maximum bandwidth, AM television with vestigial sideband. One sideband (about 5 MHz wide) is transmitted intact and the other (vestigial) sideband has its bandwidth reduced, normally to about 1.25 MHz, in order to save spectrum space. Used by TV broadcasters and the normal mode for amateur AM ATV.

18M0F3F 18 MHz maximum bandwidth, FM television. Actual bandwidth is determined by deviation, video bandwidth, and the frequency and bandwidth of any audio subcarriers.

5.2 P Modes: Pulse Modulation

Pulse modulated signals consist of a carrier which is keyed on and off by square wave pulses. Bandwidth depends on the pulse rise time and repetition rate and is usually very large. Used mainly by radars or ionosondes, but has also been used in the past by amateurs on microwave bands. An example would be **1M00P0N** (1 MHz maximum bandwidth, unmodulated series of pulses). Other combinations are possible, for example **P2A** (tone modulated pulse), **P3E** (voice modulated pulse), or **P3F** (video modulated pulse).

6. Some Common Questions

Q. Can I use a mode that is not listed in the TLS?

A. You must observe any restric-

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The IC-706 Txcvr prize, generously donated by Icom (Australia), will be awarded by way of a draw and the result published in July 1996.



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Further details are available from your Division, see contact details on p.3 of this issue.

tions specifically stated in the TLS, but otherwise you can assume that anything is legal unless the TLS states otherwise.

If you hold a Novice or Novice Limited licence, the TLS includes a list of permitted modes for each band, so you can only use modes that are included in the list. Note that the permitted modes are not the same for each band.

For Unrestricted, Intermediate and Limited licensees, the TLS includes mode restrictions on bands below 30 MHz, and in the 50 – 52 MHz band in the eastern states. On higher bands there is no list of permitted modes, so this means that you can use any mode. The only restriction is the one on wideband modes mentioned above.

Q. Can I use any authorised mode on any frequency within my allocated bands?

A. According to the regulations, yes. But you need to be careful to avoid interfering with other stations. For example, it is anti-social to use modes like AM or FM in crowded HF bands, when SSB would do a better job and take up much less band space.

It is also a good idea to check the *Australian Amateur Band Plans* to see which band segments are recommended for different modes. On the HF bands, some band segments are reserved for CW or digital modes only, and you will not be popular if you use SSB there. Likewise the reverse.

On the VHF bands, some band segments are reserved for weak signal work, beacons, satellites and so on, and strong local signals (especially FM) in these band segments are bad news.

The SMA regulations do not require you to follow the band plans but it makes sense to avoid causing interference to fellow amateurs – just as you would expect other amateurs to avoid causing interference to you. Copies of the band plans are included in the Call Book and are also available from the WIA. They are also being published in *Radio and Communications*.

Q. Can I use FM on frequencies below 29 MHz?

A. Yes and no. You can if your transmitted bandwidth is no more than 6 kHz, but virtually all HF transceivers occupy bandwidths far greater than 6 kHz in FM mode and would need modification to make them legal below 29 MHz. Some radios have preset deviation controls and will have to be opened up to make the adjustment. If you reduce your FM bandwidth to make it legal below 29 MHz, it will be too narrow for normal operation on 29 MHz simplex or repeater channels. The best solution is to use FM only above 29 MHz, where you can be sure that your transmission is legal.

There is no good reason for using a wider bandwidth than necessary on crowded HF bands. Apart from 29 MHz repeaters, FM on the HF bands has mainly curiosity or nuisance value.

Q. But the specs of my HF radio give an FM deviation of +/- 2.5 kHz – that makes 5 kHz.

A. Yes, but deviation is not the same as bandwidth. With FM, your bandwidth depends on your modulation index and the bandwidth of the modulating signal, and whether your radio uses frequency or phase modulation. As a rough guide, your bandwidth will be equal to your deviation plus twice the highest modulating frequency. Therefore, a deviation of +/- 5 kHz, and a voice passband of 3 kHz, usually means about 16 kHz bandwidth.

If you are unsure of your transmitted bandwidth on FM, check the receiver bandwidth specification in your radio's instruction manual. You can assume that your transmitted bandwidth will be about the same as the -6 dB bandwidth of your FM receive filter. For most HF radios, this figure is between 12 and 15 kHz – not legal below 29 MHz.

Q. How close to the band edges can I operate?

A. According to the regulations, your occupied bandwidth must be "wholly contained" within the band limits. You need to know what your occupied bandwidth is, so you can choose a frequency far enough away

from the band edge. This depends on the mode.

For CW, assume that you occupy the maximum permitted bandwidth of 200 Hz. Half of this bandwidth is on either side of your nominal frequency, therefore you should operate at least 100 Hz away from the band edge.

For SSB, assume that your occupied bandwidth extends 3 kHz above your suppressed carrier frequency (for USB), or 3 kHz below it (for LSB). This means that for USB, you must keep at least 3 kHz below the upper band edge, and for LSB you must keep at least 3 kHz above the lower band edge.

Examples: The 15 metre Novice band extends to 21300 kHz, therefore, using USB, you can go no higher than a suppressed carrier frequency of 21297 kHz. The 80 metre DX window extends down to 3795 kHz, therefore, using LSB, you cannot go below a carrier frequency of 3798 kHz.

For AM or FM, half of your bandwidth is on either side of your carrier frequency, so you must keep within the band by at least that much. For example, using 16 kHz bandwidth FM, a Novice station could operate as low as 146,008 kHz, but any lower would place part of his signal outside the 146 – 148 MHz band. In practice you should allow a little more leeway than this, because your peak deviation may be greater than you think.

With any mode, you also need to allow some extra leeway to take care of any frequency setting errors or any inaccuracy in your frequency readout.

Q. Can I be sure that I am actually transmitting on the exact frequency shown on my readout?

A. No! There may be some error in your readout due to one or more of your oscillators not being exactly on frequency. Remember also that your readout only shows a single frequency, but your actual occupied bandwidth extends above and/or below that frequency.

In CW mode, it is quite common for the readouts of amateur transceivers to shift by about 800 Hz. This means

that the indicated frequency will only be correct if you tune the other station for an 800 Hz beat note. If in doubt, try zero beating VNG or WWW in SSB mode, then switch to CW and see what happens to your readout and to the pitch of the received signal.

In SSB mode, most modern radios indicate the suppressed carrier frequency. But many older radios have a dial marker which shows the passband centre frequency instead. If you have one of these radios, you have to remember that your occupied bandwidth will extend about 1.5 kHz either side of the indicated frequency.

All this may seem confusing but there is no problem provided you understand the characteristics of the radio you are using. If in doubt, check your radio with a frequency counter or ask for an on-air check with another station.

Q. Which is the right mode to use for RTTY or packet?

A. On HF and 50 MHz, all amateur operation is FSK; no-one uses AM or FM. Some radios allow direct FSK (F1D), but with most the only way is to use J2D mode by feeding the TU or TNC into the microphone socket (or data input socket, if there is one). FSK can also be used on 2 metres and higher bands, but most digital operation is on FM channels using F2D mode.

Q. What is the situation with regard to avoiding the use of certain frequencies?

A. The old RIB71 listed three frequencies that we must avoid: 1870 +/- 4 kHz; 3794 - 3795 kHz; and 10.1415 MHz +/- 4 kHz. These restrictions have been omitted from the latest TLS but the SMA has advised that this was an oversight which will be corrected. Therefore, these frequencies should still be avoided.

Q. Are there any other regulations in addition to what is in the TLS?

A. Yes. All amateur stations must also abide by the General Conditions for amateur stations set out in the Radio Regulations. These

regulations include conditions relating to the control of the station; the requirement to identify every ten minutes; and restrictions on retransmissions of other stations.

All of these regulations are much the same as in the previous RIB71. If you contact your local SMA office and ask for a copy of the regulations, make sure you ask for the General Conditions as well as the relevant TLS.

7. Conclusion

I hope this article may clear up any questions that readers may have had about which modes are legal. It may be possible to do a follow-up article on any grey areas that I have not covered properly, or on other aspects of the regulations. It's up to you! If you are interested in ploughing through more articles like this one, please let me know and I will see what I can do.

**PO Box 2175, Caulfield Junction, VIC 3161*

ar

WIA NEWS

When a Tower Ain't a Tower

Antenna towers in the suburbs, as every amateur knows, attract controversy more frequently than lightning. Municipal councils everywhere regard them as egregious erections, no matter whether the council's on the tower proposers' or the objectors' side. Egregious has two meanings: extraordinarily bad, even flagrant, on the one hand, and distinguished or eminent, as in standing out from the herd, on the other hand. Do you see the point?

In Sydney, it seems Kuringai Council takes the first view, while Blacktown Council is reported to hold the second view.

Two recent antenna tower applications overcame planning objections in their respective localities with a little lateral thinking, from which amateurs everywhere might take good example.

Kirklees Council, in Britain, refused permission for an amateur in Spenborough to erect an 18 metre (60 ft) high antenna tower in his own backyard. But the amateur remained undaunted. He did his homework (an essential exercise when it comes to tower installations).

Poring over the local planning regulations, he discovered that he could build his tower, so long as it didn't touch the ground. A bit of a problem with an 18 m tower. But

amateur ingenuity will out, and so he put a retractable tower on his Land Rover, which he parked in his driveway, and his DX beam antennas went on top.

The neighbours were reportedly furious, but Kirklees Council found they were powerless to move against the amateur. The neighbours reportedly demanded council tax reductions to put up with the "eyesore".

Meanwhile, closer to home, Australian telecommunications carrier, Telstra, has been even more ingenious in avoiding objections to an imposing cellular mobile telephone transmission tower planned for a prominent site in the Melbourne suburb of Burwood. The proposed tower, an open-lattice structure standing 34 metres tall (104 ft), will be erected on the corner of Blackburn Road and the Burwood Highway, which is the site of the local Uniting Church. The tower will have a crucifix on top (apart from the 900 MHz mobile phone antennas). The City of Whitehorse approved the design last November.

Telstra plans to use the same approach at other sites.

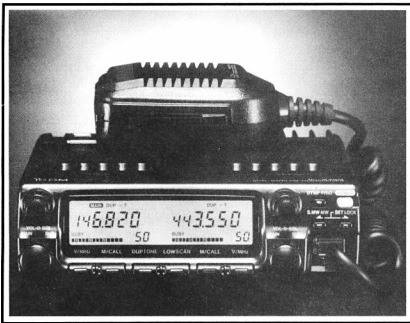
**Have you advised
the SMA of your
new address?**

■ Equipment Review

ICOM IC-2350H

Dual Band FM Transceiver

*Reviewed by Paul McMahon VK3DIP**



easily-read display at the front. Audio quality seems good in subjective on-air tests; and the receiver sensitivity, unlike some of these sets I have tested, seems pretty flat across the ranges covered.

The manual, as per usual these days, could just about have referred to some other radio. No mention is made that the reception below 136 MHz is AM, nor that there is coverage of 830 MHz to 950 MHz. There is definitely an opportunity for some third party to do a better job of a user's guide.

The packaging was the standard styrofoam and cardboard but I was interested to see that the foam seemed to be formed for a slightly different shape set. Perhaps this is another sign of being frugal; or again, perhaps the box, like the manual, was put together before the design of the set was finalised.

Technical Bits

The receive frequency coverage of the review set as measured was 118 MHz - 174 MHz (VHF); and 320 MHz to 479 MHz and 830 MHz to 950 MHz (UHF). The segment 118-136 MHz seems to be basically set up for AM, while all other frequencies are set up for FM. Some mention of this in the manual would have been helpful. At one stage I thought my signal generator was not working properly.

On testing, however, the receiver seems to be very good with only about 8 dB ripple in the sensitivity across the VHF segment. UHF sensitivity also, while not measured directly, seemed to be quite flat, even up in the mobile phone area (the 830-970 MHz range). The transmitter does seem to be as advertised, that is 144-148 MHz and 430-440 MHz.

As usual, no circuit diagram was provided so, again, any real technical details are restricted to what small amount is in the manual and things which I could manage to measure from the outside.

As far as the bits from the manual are concerned we find that it has a dual conversion superhet with a 17.2 MHz and 30.85 MHz first IF on VHF and UHF respectively, with both bands using a 455 kHz second IF. Sensitivity for 12 dB SINAD is claimed as less than 0.16 μ V.

What Is It?

The IC-2350H is a dual band (2 m and 70 cm) FM mobile transceiver, with up to 50 watts of transmit output power on VHF and up to 35 watts of transmit output power on UHF. As received, the review set had wide coverage receive enabled with a 118 MHz - 174 MHz (VHF) and 320 MHz to 479 MHz (UHF) range. UHF also included an extra segment 830 MHz to 950 MHz. The unit is of mid-size (140 x 40 x 204.5 mm) and weight (1.2 kg). The review unit was kindly supplied by ICOM Australia and had the serial number 01906. Retail price is around \$1200.

First Impressions

The unit is solidly built and well laid out, with the usual dual symmetrical setup of display and knobs for frequency selection, etc. The microphone connector is, as seems to be becoming standard, one of those pseudo phone connector plastic click-in things. These are very easy to put in, but can be a bit fiddly to take out. I would also have some concern as to how many times you could do this, but I must admit to not having heard too many complaints myself about this sort of connector.

The unit is basic black with a large heat sink at the back and a large

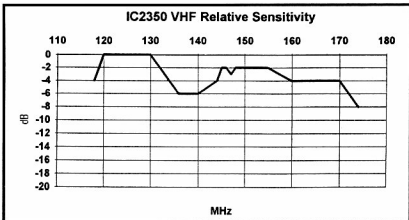


Figure 1

Selectivity is on a par with other like boxes, as is spurious and image rejection.

Audio output is claimed at better than 2.4 watts, and subjectively sounded clear and clean. For the transmitter, the rated power outputs were 50, 10, and 5 watts on VHF and 35, 10, and 5 watts on UHF. Peak current drain at maximum rated power out is given as 11.5 amps at 13.8 volts.

The set has 110 memories shared across the bands (100 normal, two call, and four scan edges), and has selectable tuning step sizes of 5, 10, 12.5, 20, 25, 30, and 50 kHz.

Tests

The results noted below are for the VHF side of the receiver, more because of the available test equipment rather than anything else. I feel, however, that they are probably

representative of the UHF band as well, based on "on-air" performance. The apparent fact that the set automatically selects AM for the segment 118-136 MHz was a bit of a surprise, as there was not even a hint of this in the manual. This is, however, a useful thing as this area contains the AM aircraft band.

The VHF receiver performance is shown in Fig 1.

The S meter was fairly linear in its operation, as shown in Fig 2. One strange thing, however, was that while the S meter had 14 little LCD squares, they only seem to come on in pairs. In effect, then, there are only seven segments leading to somewhat less resolution than might have been thought.

Operation

The fan on the back of the heat

sink made little noise, and could be set up to be on permanently, or only on transmit, etc if the noise was a problem. In a mobile environment, where the set is intended to be used, it would be pretty hard to notice the fan noise unless you had a very quiet car. The heat sink became warm after some time of continuous use, and the fan is definitely needed.

If this, and similar sets, are mounted in a vehicle, then you really should be careful where you mount them so that they have a good airflow, but remember that heat sinks can be bi-directional. I do, unfortunately, remember the time I mounted one radio in a car in an area with too good an airflow. In winter, during one long drive with the car heater on flat out, I discovered too late that the hot air from the car heater was blowing directly onto the set heat sink. The effect of this was that more heat was being transferred from the surroundings to the finals, than from the finals to the surrounds. The result? Exit stage left one expensive PA module.

As has been said already, the on-air performance was quite good, and the scanning and tuning functions were as you would expect - simple to use and could basically be worked out without recourse to the manual.

Conclusion

This is a fine mobile rig with a good wide-band, though not continuous coverage, receiver. I would be quite happy to have it in my car.

*47 Park Avenue, Wattle Glen VIC 3096

ar

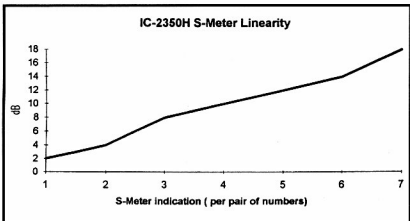


Figure 2

**Sign up a new
WIA member
today – we need
the numbers to
protect our
frequencies and
privileges.**

■ History

Television 110 Years Ago!

Who would have thought that TV, in a primitive but feasible form, was first suggested in Australia in 1885? This was only one of many highlights in the life of one of the first Australians to achieve fame in applied science. He was also one of our first radio amateurs. His name was Henry Sutton. This brief summary of Sutton's life is derived from several sources and assembled by the Editor, Bill Rice VK3ABP.

Most of the material in this story comes (with permission) from a regular column by Phillip Adams in *The Bulletin* (the long-established and well-known Sydney news magazine). In the issue dated 9 October 1984, Adams' column is headed "The Aussie Who Really Invented TV". But Adams, in turn, "relies heavily" on a speech to the Melbourne Club in July 1981 by Clive Coogan of the CSIRO. Coogan discovered Sutton accidentally while "browsing in a library in 1980". A copy of the Bulletin article was passed on to *Amateur Radio* by one of Sutton's descendants, Jeff Sutton VK3SJ.

The Sutton family began in Australia with the arrival of Richard Sutton on the Ballarat goldfields in 1853. To quote Phillip Adams, "Seeking amusement in his tent at night, he set about constructing a concertina, a device which had just been invented in England by Charles Wheatstone, the father of the telegraph".

This was the beginning of Sutton's Musical Emporium which traded, in Melbourne and elsewhere, for over one hundred years (but sadly is no longer in the Melbourne telephone directory).

Henry Sutton was born in Ballarat on 3 September 1856. At the age of 12 he appears to have learned all that school could teach him and sought knowledge elsewhere. "By 14 he had read every book on science and engineering in the library of the

Mechanic's Institute". Based on this newly-acquired information he built an ornithopter (a wing flapping flying machine), which was successful enough for him to be invited at the age of 21 to address the Aeronautical Society of Great Britain. In the meantime, at 14, he had invented an electric dynamo/motor anticipating the Frenchman, Gramme, whose name is now remembered rather than Sutton's because Sutton could not be bothered with patents!

*"Sadly, Edison had
invented the
same device
just 16 days earlier."*

To quote further from Adams, "Before he was 25, the young Sutton had invented a new type of lead storage battery, a torpedo, a colour printing process, telegraph facsimile and a method of using gas and water pipes for telegraphic signalling. And working in the isolation of Ballarat, far from the company of other scientists or technicians, completely ignorant of Thomas Edison's work, Sutton invented a carbon filament lamp. Sadly, Edison had invented the same device just 16 days earlier."

A brief account of Alexander Graham Bell's telephone in the *Scientific American* was sufficient to

enable Sutton to devise 20 different types of telephone, and to install probably "Australia's first telephone line" between the music emporium and warehouse. "Shortly thereafter Bell visited Ballarat, where he was duly astonished by Sutton's achievements."

By the time Sutton was 30 he had been a lecturer at the Ballarat School of Mines for some years and, to quote from Withers' "History of Ballarat", published in 1887, "won fame as a student and inventor acknowledged by Prof Andrews and Mr Ellery as one of the best lecturers." (He taught electricity and magnetism.) Ellery was the Victorian Astronomer Royal.

Further quoting from "History of Ballarat", "Mr Sutton has designed, but not yet constructed, an apparatus by which he hopes to be able to see here in Ballarat, by the aid of electricity, the race for the Melbourne Cup."

A diagram is reproduced here from "The Telegraphic Journal and Electrical Review" of 7 November 1890 showing the basis of his television. The portrait is presumably of Sutton himself. The diagram refers specifically to the use of a Nipkow disc (patented in 1884) for scanning, so Sutton obviously was aware of Nipkow's work, but he predated by three decades the development of mechanically scanned systems by John Logie Baird.

As we now know, Baird's system was rendered obsolete by fully electronic systems, and Sutton's version would have been no more successful. But Baird in the 1920s may well have been influenced by Sutton's publication in 1890. If Baird can be described as the "father of television" then Sutton would have to be one of the grandfathers.

In fact, of course, if any one person could be called "the father of television" in the form in which it finally evolved, it would have been the Russian emigre genius, working first for Westinghouse, then for RCA, Vladimir Kosma Zworykin. But in Sutton's time, Zworykin was decades into the future.

Had Sutton's achievements been no more than those already outlined,



Fig. 3.34 Schematic of Sutton's 'Telephone', devised 1885
[Sutton (1890), Fig. 4]

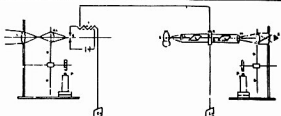


Fig. 3. Arrangement of Circuits

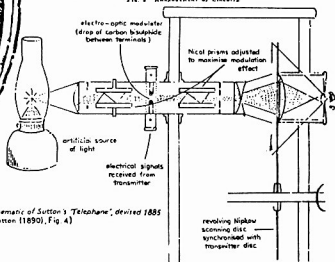


Fig. 3.34 Schematic of Sutton's 'Telephone', devised 1885
[Sutton (1890), Fig. 4]

they would have been impressive enough. But Adams' column also claims that Sutton built "the first motor car in Australia and then made another He made the first triumphal trip by car from Melbourne to Ballarat, escorted by members of the Melbourne Cycle Club. And later moved a motion at a meeting of automobile amateurs which gave rise to the Royal Automobile Club of Victoria."

Sutton is also claimed to have built a portable radio transceiver in 1900 and to have become "one of Australia's first radio hams granted a licence by the Commonwealth to erect a wireless station at his Malvern home." Apparently he had by then moved from Ballarat to Melbourne (early in the 1900s). He died at the early age of 58 in 1914 (in Ballarat), but is buried in Melbourne at the Brighton Cemetery.

Throughout his life, Sutton seems to

have had a genius for applying novel solutions to current problems, mostly based on the knowledge of the day but also adding to it. His 1900 radio was probably similar to the spark and coherer equipment with which Marconi immortalised himself at about the same time.

Everybody has heard of Marconi, but how well known is the name of Henry Sutton?

I must confess, until approached by Jeff Sutton, that I had never heard of Henry Sutton. Yet he is as important to Australian technological history as, for example, Lawrence Hargrave (Sutton's ornithopter preceded Hargrave's box kites by nearly 20 years!)

Perhaps this article may help make better known the achievements of Henry Sutton, one of Australia's unsung geniuses!

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WIA News

New WIA Members

The WIA bids a warm welcome to the following new members who were entered into the WIA Membership Register during the month of December 95.

L30854	MR A RAUS
L30922	MR R HILL
L30923	MR K MCCARTHY
L30924	MR B RICH
VK3ADI	MR D G TURNER
VK3EA	MR R OWEN
VK3HBI	MR R GARDNER
VK3JUV	MR E R SHAW
VK3KTM	MR R G WILKINSON
VK3MRG	MR C R GEORGESON
VK3TOC	MR T ALLEN
VK3XAS	MR A SCOTT

■ Historical

Our Mrs Mac

Christine Taylor VK5CTY, President ALARA, the organisation which carries the flag for all the YLs who followed Mrs Mac into the field of amateur radio.*

Were you or your children or grandchildren among the 6000 people who saw the stage production "Electro Diva"? If so, you know all about Mrs Mac, as many others do through personal experience.

"Electro Diva" was written by Anita Punton for the Arena Theatre Company, and is based on the life of Mrs Florence (Violet) McKenzie VK2GA/2FV who prepared thousands of young men and women to enter the armed services during World War II with skills in radio telegraphy.

Mrs Mac was a remarkable woman who could be said to have been born before her time. She was a fully licensed electrician who clambered over and between the rafters installing house wiring. She was the first woman to hold a Diploma in

Electrical Engineering as well as being the first woman in Australia to take out an experimental wireless licence, in 1921, and to pass the amateur examination in 1925. With her background she found the theory easy and developed a lifelong love of Morse Code.

With her husband she ran a radio shop in the Old Royal Arcade in Sydney before WW II. There she not only sold electrical components but was always happy to explain the technicalities and help with circuits or advice on soldering.

However, it was the advent of WW II that led her to foresee the importance communications were going to play in wartime. She set up a "school" in Clarence Street, Sydney to teach Morse code to both men and women.



Mrs Mac in 1924.

Long before any one else, she could see how women could play their part in winning the War. She saw that men could be freed for other duties if women telegraphists were used in their place.

When Billy Hughes and the leaders of the Armed Services were slow to understand, she bombarded them with letters and visits. She was responsible for the formation of the WRANS who served, and serve, our nation so well. She was awarded an OBE for her service to Australia and is commemorated by a stained glass window in the Royal Australian Navy's Garden Island Chapel.

The play "Electro Diva" was performed in the 1995 year of "Australia Remembers" (unfortunately only in VK3) but, as it was taken to many schools after its theatre season, we can be sure that many children were inspired by the lady known to so many servicemen all over Australia as "our Mrs Mac".

*16 Fairmont Avenue, Black Forest SA 5035

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A promotion photo for the play "Electro Diva".

Photo by Ponch Hawkes

Your Call Sign or Name Can Fly on Phase 3D

AMSAT-UK is sponsoring a program that allows individuals or organisations who make a donation to have their name or call sign engraved onto an aluminium plate and placed on the Phase 3D amateur satellite before it flies – which is not far off!

According to a release from the Radio Society of Great Britain (RSGB), the offer is open to any individual sending at least \$US250, or businesses, universities or government agencies sending \$US8000.

All methods of payment, including currency, Mastercard, Access and VISA are accepted and will be acknowledged with a receipt. Donations should be sent to R J C Broadbent MBE G3AAJ, Director, Phase 3-D B of D,

AMSAT-UK, 94 Herongate Rd, Wanstead Park, London E12 5EQ, ENGLAND.

Ron can be contacted via Internet e-mail at r.broadbent@ee.surrey.ac.uk (Compuserve ID: 100024,614), fax on 44 0181 989 3430, or (last resort) phone on 44 0181 989 6741.

In addition to having funds to complete construction of the Phase 3D satellite, money is also required for use during the life of Phase 3D for command stations around the world, to control the spacecraft for the benefit of all radio amateurs.

As with the present AO-13, command stations normally get funding assistance to a greater or lesser extent by the AMSAT group of the respective country. This is a hidden charge on those groups, which the majority of the world's

amateurs rarely think about, let alone subscribing to the AMSAT organisation.

So, act today and your call sign or organisation's name could fly on AMSAT Phase 3D. AMSAT-UK has already paid more than 110,000 pounds towards the Phase 3D satellite, and the RSGB presented AMSAT-UK with a cheque for 25,000 pounds towards the project at the RSGB's Annual Meeting last December. The cheque was accepted by Ron Broadbent MBE G3AAJ.

If AMSAT-UK can raise a similar amount from other sources, the RSGB Council has agreed to make a further contribution of 25,000 pounds. Ron G3AAJ, in thanking the RSGB for its support, said he hoped that AMSAT-UK could double or treble the amount the RSGB had given.

1996 WIA AUSTRALIAN RADIO AMATEUR CALL BOOK

Buy your copy NOW from your Divisional Bookshop

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Special Price to WIA Members \$13.00

All Prices plus Postage and Handling where applicable

A Decade of Change

The most dramatic changes to amateur radio in Australia came about during the past 12 months, the culmination of a decade of increasing development and pressure for change in licensing, privileges and conditions.

Two new licence grades and improved privileges for existing licence grades came into effect last year with the announcement of the new Technical Licence Specifications (TLSS) for radio amateurs.

The Radiocommunications Act 1983 was reviewed and became the Radiocommunications Act 1992, subsequent to which the Department of Transport and Communications disappeared and the Spectrum Management Agency (SMA) was created in 1993. One of the first major projects of the new Agency was to review Apparatus Licensing. As a result, amateur radio became a single licence type, with seven subtypes. Beacons and repeaters are now formally recognised as a separate licence subtype, with their own licence conditions.

During the past decade, Australian amateurs were allocated five more bands and two existing bands were widened, while last year's changes saw an increase in the international 50 MHz "DX Window" by 100 kHz to 50.0-50.3, increased power for Novices from 30 W to 100 W and 100 kHz more band access on 21 MHz, plus access to 10 m for Limiteds.

While there has been something for everyone in the new licences, privileges and operating conditions introduced last year, license fees jumped from \$36 to \$51 for individuals, and charges for new beacon and repeater applications were introduced. However, the cost of renewals for some beacon and repeater installations has dropped.

An overview of the licences, privileges and conditions for 1985 can be compared with those as at 1995 in the Table 1. As can be readily seen, 1995 privileges and conditions are significantly improved over those prevailing in 1985! But it didn't all happen at once.

New bands and new limits for existing bands are highlighted in bold

LICENCES, PRIVILEGES & CONDITIONS A DECADE OF CHANGE: 1985-1995

1985			1995		
Licence Grades	Bands		Bands	Licence Grades	
Full	1800-1875 kHz		1800-1875 kHz	Full	
Full	3500-3700		3500-3700	Full & Intermediate	
Novice	3525-3625		3525-3625	Novice	
Full	3794-3800		3794-3800	Full	
"	7000-7300		7000-7300	"	
"	10.1-10.15 MHz		10.1-10.15 MHz	"	
"	14.0-14.35		14.0-14.35	"	
"	18.068-18.168		18.068-18.168	"	
"	21.00-21.45		21.00-21.45	Full & Intermediate	
Novice	21.125-21.200		21.125-21.200	Novice	
Full	24.89-24.99		24.89-24.99	Full	
"	28.0-29.7		28.0-29.7	Full & Intermediate	
Novice	28.1-28.6		28.1-28.6	Novice	
"			29.0-29.7	Limited	
Full & Limited	52-54		50-54	Full, Limited & Intermediate	
"	144-148		144-148	Full, Limited & Intermediate	
"			144.692-145.208	Novice & Novice Limited - digital	
"			146-148	Novice & Novice Ltd - voice & digital	
"	420-450		420-450	Full, Limited & Intermediate	
"			433-435 & 438-440	Novice & Novice Ltd - voice & digital	
"	576-585		(576-585)	* permitted use only	
"	1240-1300		1240-1300	Full, Limited & Intermediate	
"	2300-2450		2300-2450	"	
"	3300-3500		3300-3500	"	
"	5650-5850		5650-5850	"	
"	10.0-10.5 GHz		10.0-10.5 GHz	"	
"	24.0-24.25		24.0-24.25	"	
			47.0-47.2	"	
			75-81	"	
			119.98-120.02	"	
			142-149	"	
			241-250	"	
Powers			Licence Grades		
peak	mean		peak	mean	
400	120	Full	400	120	Full
100	30	Combined	400	120	Intermediate
400	120	Limited	400	120	Limited
100	30	Novice	100	30	Novice
			Novice Limited	~	30
Emission Modes			Licence Grades		
>1000	>300	>30 MHz HF All	HF Special	>30 MHz	>420
+1	+13	+9	28	40 29 MHz/+2	Any Any + WB
+1	+8	28	6	40 29 MHz/+2	Any Any + WB
+1	+8	28		29 MHz/2	Any Any + WB
		6	Novice	7 3.5 & 28/+8	2m, 8/10 70cm,10
			Novice Limited		2m, 8/10 70cm,10

Table 1. Licences, Privileges and Conditions - A decade of change: 1985-1995

type. New band segment allocations or limits are also highlighted in the same way. Note the five new bands in the extra high frequency (EHF) spectrum. These were allocated following a decision of the 1979 World Administrative Radio Conference (WARC-79), but weren't released until after 1985. The 10 cm (3300 MHz) band has been expanded by 100 MHz. Access to the worldwide 50 MHz allocation was returned in 1991, with

regional limitations in Ch 0 broadcast areas, to 50.0-50.2 MHz, which was expanded last year.

An entirely new licence, the Novice Limited, arrived with the revised licence privileges and conditions last year. This provides a new "entry level" licence - a so-called "no-code" Novice licence. It simply requires passing the Novice theory and regulations qualifications and provides access to segments of the popular 2 m band, along with 70

cm, and allows the use of both voice and what are regarded as the all-important digital modes. This is seen as being particularly attractive to today's young computer technology enthusiasts, as well as those seeking to enter amateur radio but having more of a communications interest.

The old Combined licence, which was for holders of Novice and Limited qualifications, has gone. The new Intermediate licence has replaced it, but with considerably enhanced privileges. Where the old Combined licence simple added Novice privileges to the Limited, and a distinctive call sign suffix (K-calls), the Intermediate licence provides access to the entire 80, 15 and 10 metre bands, with Full-licence powers and privileges. This makes sense, as previously, Combined licensees had the knowledge of Full licensees, without the Morse code qualification, and were unrestricted in modes and powers above 30 MHz, but restricted to the Novice modes and powers on HF.

All licensees now have access to a wide variety of data transmission modes, where a decade ago, only those with Full and Limited qualifications could use data modes, and they were restricted to a defined few modes. While automated reception and transmission of radioteletype (RTTY) was well advanced in 1985, especially with the adaptation of the then-burgeoning personal computers (the "glass teletype"), packet radio was still in relative infancy.

In 1985, operation on the HF bands was restricted to 28 emission modes, which have ballooned to 40 modes today (42 on 10 m). Above 30 MHz, now, amateurs may use any emission mode that may be devised, with the exception of "wideband" modes on 6 and 2 m. In 1985, the modes for all bands were strictly defined. Today, above 420 MHz, any emission mode and modulation method that can be devised may be used (and that includes those "not yet invented"), but wideband signals must remain within the band in use. In other words, "you can do what you like, but keep it in your own backyard." That's a far cry from 1985, and strikes a positive blow for amateur experimentation!

While there has been continuous demand for development and deregulation in amateur radio since privileges were returned 50 years ago following World War 2, the gains made were largely incremental – that is, generally small and one step at a time. Demand for change was given considerable impetus and focus with publication of what became known as the "Linton/Harrison Paper", authored by Jim Linton VK3PC and Roger Harrison (then) VK2ZTB and published exactly 10 years ago. Titled *Amateur Radio, Future Direction*, it appeared simultaneously in *Amateur Radio* and *Amateur Radio Action*. The authors subsequently won a Higginbotham Award from the WIA Federal Publications Committee.

The paper gained some public coverage in the press ("Paper seeks to revamp amateur radio licences," *The Australian*, 11 February 1986) and sparked a debate within the amateur radio community which continued for many years after publication. The paper highlighted developments in electronics and communications which were then beginning to have some impact on amateur radio and were predicated to grow and increasingly influence the hobby.

Highlighting the perceptions of the hobby held by those outside amateur radio, the Linton/Harrison paper advocated a restructuring of the licence system to provide more "entry points" and the removal of restrictions so as to encourage more experimentation. It is remarkable to see just how many of the concepts recommended in the paper have been implemented.

Two "code-free" licences were proposed. First, a "new Novice" licence was suggested ("Telephony Beginners"), providing voice operation on 70 cm after passing a theory exam more elementary than the Novice, and a regulations paper. This concept has languished. The paper proposed the Novice be "enhanced" by the addition of access to 2 m and 70 cm, and the use of data emission modes. Novices gained access to 2 m in 1986, then 70 cm and the use of data modes last year.

The Combined licence concept was retained and the concept of an

"Intermediate (Digital)" licence was introduced, which was to be a grade between the Telephony Beginners and the Enhanced Novice, but without the Novice HF privileges – aimed at attracting computer enthusiasts new to communications. The new Intermediate Licence last year replaced the old Combined, with enhanced privileges as noted earlier. However, the new Novice Limited echoes the concepts of the paper's Intermediate (Digital) licence.

The Linton/Harrison paper's fourth major recommendation was the removal of the "defined mode" restrictions for Full and Limited licensees, "to permit experimental freedom with new transmission modes," which has now come to pass. The paper urged increasing the power limit (no change, here) and to permit unattended operation of Full and Limited licensees' stations – which is now a reality.

Just what influence the paper had on subsequent events can only be conjectured, but the DOTC began a review of the amateur radio privileges and conditions from 1989, less than four years following the paper's publication and with the debate still fresh in the mind of many. The DOTC sought to move towards a more deregulated regime, not only for the Amateur Radio Service. This was largely driven by the Federal Parliament's powerful House of Representative's Standing Committee on Transport and Communications Infrastructure (HORSCOTCI), changing the face of communications in Australia as a result.

Many of the changes to amateur radio have flowed from that mid-decade review, a process in which the WIA was closely and continuously involved. Apart from improvements to the licensing structure and privileges, the amateur examination system is now run by the WIA, since 1992, with examinations being overseen by amateurs accredited by the WIA. Every amateur, whether licensed earlier or since, and thus the amateur radio community as a whole, has benefited from this decade of change.

ALARA

Sally Grattidge VK4SHE*, ALARA Publicity Officer

ALARA Award

ALARA has an attractive award, based on contact with other members, which is quite easy to earn. If you have always considered awards to be a major undertaking requiring many hours chasing illusive callsigns, and therefore not the kind of activity you can slip in between getting the washing off the line and making tea, this one may be a good one to try.

The award is available to YLs, OM and SWLs contacting ALARA members on or after 30 June 1975. VK/ZL applicants require 10 contacts, including five Australian call areas, and DX applicants require five contacts, including four Australian call areas. All contacts must be made from the same call area, and repeater contacts and official ALARA net contacts do not qualify. Special endorsements are available for Mixed, CW, Phone, All 28 MHz, etc, and endorsement stickers are available for each 10 (five DX) additional members contacted.

Applicants must submit a log extract which has been certified correct and signed by two other amateurs, under headings of DATE - TIME UTC - BAND - MODE - CALLSIGN - NAME (of ALARA member contacted) - REPORT SENT/RECEIVED. Full name, address, signature and callsign of applicant are also required. The fee (to accompany the application) is \$AUS3.00 or four IRCs. Additional stickers, to be applied for at a later date, cost \$AUS1.00.

Applications for this ALARA Award should be sent to the ALARA Awards Custodian, Jessie Buchanan VK3VAN, 4 Milford Crescent, Karingal, Victoria 3199.

NZ WARO Awards

GENERAL: Contacts may be in any mode or band, with the applicant's contacts all from the same QTH (except on the VHF section), but contacts via repeaters, WARO nets or contests are ineligible. QSLs are not required. Send a list certified by one other licensed amateur to the award custodian with sufficient postage for return of the award.

MAIN AWARD: ZL and VK stations work 12 WARO members resident in New Zealand. DX stations work 6. Contacts date from 1 June 1969. Endorsement seals are available to ZL and VK stations

for each additional 12 stations; and to DX stations for each additional six stations. Contacts with WARO DX members qualifying for endorsements must contain at least three ZL contacts.

VHF SECTION: 10 VHF contacts with WARO members dating from 1 June 1979. WARO members and/or applicants may be home station, mobile or portable. Endorsements for each additional five.

SWL SECTION: ZL and VK stations list 20 contacts heard with WARO members. DX list 10. Date from 1 January 1979. List full log details with callsigns of both stations concerned. Endorsements for each additional 10 stations; and to DX applicants for each additional five stations.

Applications should be sent to the WARO Awards Custodian, Jeanne Gilchrist, 37 Roy Crescent, Concord, Dunedin, New Zealand.

News from the Members

Meg VK5AOV was awarded an Honourable Mention for a watercolour in a local art show. Meg has only been painting for four years and turned to watercolour only two years ago so this is quite an achievement.

At the Adelaide Hills Buy and Sell day Meg VK5AOV, Tina, Jean VK5TSX, Maria VK5BMT, Yvonne VK5AHK and Christine VK5CTY ran a craft stall as well as the usual tea and coffee, worked hard and met a lot of friends.

The District Radio Ladies held a successful Christmas party at the QTH of

QSP News

1995 Amateur Radio Awards

At the January 1996 Publications Committee meeting, the winners were chosen for the Technical and Higginbotham Awards.

For the best technical article(s) of 1995, the author chosen was Ralph Holland VK1BRH for his two antenna articles "Short Vertical Antennas and Ground Systems" and "Spiral Top Loading of a Short Vertical", both published in the October issue.

For the Higginbotham Award (service to amateur radio generally, not necessarily the magazine), the winner was Stephen Pall VK2PS for his consistently thorough work in the How's DX column.

Congratulations to Ralph and Stephen who will each receive a cheque for \$100.



Ann VK4MUM, Jeanette, Sally VK4SHE and Evelyn VK4EQ, entertaining the troops at the North Queensland Amateur Radio Convention last year.

(Photo by VK4IGM)



The ALARA stand at the North Queensland Convention with (l to r) Cheryl ZL2VCC, Hazel Sleep and Sally VK4SHE.

(Photo by VK4IGM)

Robyn VK4RL, complete with Santa Claus and something about dancers with flashing lights (ever tried to get news items from 80 m on a hot summer night?). I look forward to some photographs later.

News from Ruth IT9ESZ YLRCI - Elettra Marconi

Last spring we had our annual contest with good participation, mainly from Europe due to poor propagation. To

increase interest for our only contest, this time the winners of the first two places of each category were awarded a cup instead of the usual medal.

At the HAM-RADIO in Friedrichshafen we were again present with a stand for our club and the two YLs were busy giving information about awards, etc.

1995 was the 25th anniversary of our oldest award, the **Gioconda** or **Mona Lisa Award**, and we were on the air with the special prefix IR for 10 days in October, with a beautiful award and a special QSL. More than 6000 QSOs, mainly on 20 m and 40 m, were made from 30 club members and so far over 75 applications for the special award have been forwarded.

Mid October our club was invited to be present in San Marino where the local Radio Amateurs held their first Radio Exhibition. Our club delegation was warmly welcomed and we had a nice stand at the exhibition. The two days spent in this little country (60 sq km) on the Adriatic Coast were pleasant and gave us a good chance to talk about the possibility to be QRV from their rare YL-DX location (maybe next spring?).

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Bill Magnusson VK3JT*

National co-ordinator

Graham Ratcliff VK5AGR
Packet: VK5AGR@VK5WI

AMSAT Australia net:

Control station VK5AGR
Bulletin normally commences at 1000 UTC, or 0900 UTC on Sunday evening depending on daylight saving and propagation. Check-ins commence 15 minutes prior to the bulletin.

Frequencies (again depending on propagation conditions):

Primary 7.064 MHz (usually during summer).

Secondary 3.685 MHz (usually during winter).

Frequencies +/- QRM.

AMSAT Australia newsletter and software service

The newsletter is published monthly by Graham VK5AGR. Subscription is \$30 for Australia, \$35 for New Zealand and \$40 for other countries by AIR MAIL. It is payable to AMSAT Australia addressed as follows:

AMSAT Australia
GPO Box 2141
Adelaide SA 5001

Something Moved in the Night Sky

My mate Bernie used to say, "Trouble with fishing trips is that there's always some idiot who wants to fish". Bernie was a drinker, you see. A fishing trip was just an excuse to get away from home and do some steady drinking.

Now, I have a confession to make. My main motivation for organising so many satellite mountain top expeditions over the years was not drinking but things like bushwalking, yarning around the campfire, photography and astronomy. Sure, there were people who came along just for the radio, some even came along expressly for the satellites and I have to admit that the odd bottle of port came out on New Year's Eve but my time was more or less equally shared around the above activities.

The banana lounge and binoculars were the main attraction following the evening meal when the camp fire had died down. A mile high in the alps on a clear night, the sky is alive. We have watched in awe as MIR streaked overhead while we were talking to the guys on board. "We can see you clearly and you're right above us now". It is surprising just how many satellites and

bits of space junk are visible from a good clear, dark-sky site. Around Christmas time in our part of the world the sun is not all that far below the southern horizon even in the wee small hours and there can be hundreds of objects in orbit which can be seen even without the aid of binoculars.

A satellite tracking program I came across recently is ideally suited to predicting visible satellite passes. It is called SatSpy and it was written by David Cappellucci, an American who contributes to the astronomy and amateur radio satellite forums on CompuServe. His new program has been well received. It does not pretend to replace programs like InstantTrack for OSCAR users but, if you are interested in looking for movement in the night sky, it is the "bee's knees".

Most of the current batch of tracking programs fall a poor second to the tried and tested IT, SatFoot, QuickTrak, etc when used by OSCAR satellite stations. Many new programs tend to be oriented towards "bells and whistles". They are far too complex to configure and clumsy to operate. If, however, those lights in the sky fascinate you, take a look at SatSpy. As an example I gave it a set of keys containing data for some 3000 orbiting objects. After chewing for 30 seconds or so on my 486 (it needs a fast computer), it came up with a sky map showing the star field with brighter stars and constellations and the tracks of about 50 satellites which were in the sky at that time.

The object magnitudes are shown and you can manipulate the keypad base to exclude all but (say) magnitude 3 and brighter objects. It keeps track of percentage illumination and you can point and click along the tracks to see time and illumination. You have control over preferences like maximum elevation, inclination, etc to further zero-in on the objects you want to observe.

In addition to the above it has many other features. You can look at "three dimensional" views of all orbits with complete control over viewing position. In this mode the 3d earth has continent and country boundaries and the orbit trace shows eclipse data. It has a ground track mode which looks something like IT. You can zoom in on either mode to see the exact ground trace position.

It has all the usual Windows goodies like floating menu bars. You can select the usual three twilight definitions, Civil, Nautical and Astronomical and it will give you the visible traces for these three 20

minute periods or any other 20 minute period, either in text form, graphical form or as ground or sky traces. It also has useful astronomical data like sunset/sunrise, moonset/moonrise times and phases of the moon. All good stuff for sky observers.

SatSpy is just what the doctor ordered for astro-photographers who want to AVOID satellite traces in their time exposure photographs. I assume you have at least a passing interest in satellites because you're reading this column. If you've ever wondered about those moving lights in the sky, there is a shareware copy of SatSpy in the AMSAT-VK software library.

Uplink Power Requirements for the Digisats

Here in south eastern Australia, UO-22 will respond to an uplink signal when the satellite is a degree or so below the horizon on most occasions. This prompted me to see just how far I could reduce power and still reliably access the digital birds.

I had to reduce power to five watts before there was any noticeable deterioration in performance on UO-22. It regularly updates the computer hardware clock via WiSP when it is still below the horizon and instantly responds to uplink commands after the first few packets have been received.

KO-25 has not been fully operational since I started these tests but KO-23 seems to be a little less sensitive. It is also much higher and therefore further away at AOS and LOS, so maybe its on-board sensitivity is about the same. Unless you live on a mountaintop or down a hole, KO-23 is about 4350 km away at signal capture compared to about 3100 km for UO-22. My 100 watt <grunt> IC-271-H now idles along at 10 watts output which I find is a good compromise. The only time the going gets a little rough is when the PB queue is very long.

Sometimes, in the case of KO-23 with its higher orbit and larger footprint, it is subjected to a lot of non-amateur QRM from Asia when it comes up in our northern sky. It would be fruitless to increase power under either of these circumstances so it remains at 10 watts now for all occasions. I'm using 9913 co-ax to a fairly standard 7x7 element crossed Yagi for uplink and a 19x19 element crossed Yagi for downlink in a below average location.

New station manager at SSTL

Doug Loughmiller G0SYX/KO5I is leaving the University of Surrey and returning home to Texas with his family after four years in the UK. Doug has done an outstanding job as UoSAT Command Station Manager at Surrey and his place will be taken by Chris Jackson

2L2TPO/G7UPN. Chris is the author of the revolutionary WISP ground station control program. He is to be congratulated on his appointment to this important post. In between his duties at Surrey Chris will be continuing development of the Windows 95 version of WISP.

IARU AMSAT Frequency Co-ordinator Appointed

AMSAT-NA News Service reports that our own Graham Ratcliff VK5AGR has been appointed IARU AMSAT Frequency Co-ordinator. Graham was selected from a number of nominations made by international AMSAT groups. His long association with the amateur satellite program and his excellent performance as ground command station for AO-13 were cited as reasons for his selection. Congratulations Graham.

Helix Antenna Design Development from John Kraus W8JK

There has been an interesting development in the design of helix antennas. John Kraus has described a version of his famous helix antenna which does not require the traditional ground plane reflector. It was detailed in "Antennas and Propagation" magazine, (IEEE) Vol 37 No 2 April 1995, (ISSN-1045-9243).

Instead of the mesh or solid plane reflector it uses two continuous rings of similar diameter to the helix element. The first sets the feedpoint impedance and the second acts as a reflector. The design would have particular application for mast mounted antennas where the solid or mesh reflector adds considerable wind loading to the structure.

I have not as yet built and tested one, but a friend who has reports that it works exactly as Kraus suggests and gives similar performance to the same size helix with the more usual plane reflector. It will be interesting to check on secondary and rear lobe performance. It could mean a resurgence of interest in this type of antenna for satellite work. The ungainly plane reflector has been a stumbling block for helix builders and has been a major disincentive to place them on an az/el rotator system. A dish feed using such a radiator would shade the dish much less than one with the standard reflector. This could make an appreciable difference when using smaller (say 30 cm) dishes for "S" mode.

DOVE Crashes Again

It has been reported that DO-17 has suffered another on-board software or hardware crash. The controllers are appealing for copies of the telemetry from the few days leading up to the failure to help them in their quest to set things right.

Replacement for FO-20 Under Construction

Fuji Yamashita JS1UKR, of JARL Technical Laboratory, reports that the JAS-2 spacecraft is nearing completion. It is a similar bird to FO-20 which it will replace when launched sometime in 1996. It will provide analog, mode JA and packet, mode JD communications. The uplink for analog mode will be 145.900 - 146.000 MHz and the downlink, 435.800 - 435.900 MHz. The output will be inverted and have a power of one watt. The digital mode will provide for four uplink frequencies: 145.850, 145.870, 145.890 and 145.910

MHz. The downlink will be on 435.910 MHz.

It will operate at either 1200 baud or 9600 baud speeds, switchable from ground control. It will have a new attitude control system. It will orbit in "wheel" mode with the axis of spin normal to the orbit plane. This is unusual as most amateur radio satellites are spun with the axis of spin pointing straight down. This should allow good up and down access when the satellite is reasonably high in the sky.

*359 Williamsdown Rd. Yarraville VIC 3013
Packet: VK3UT or VK3BBS #MEL VIC AUS OC
CompuServe: 100352.3065

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Awards

John Kelleher VK3DP - Federal Awards Manager*

Propagation has been slightly on the improve lately, although spasmodic. Surprisingly, some rare stations have been heard and worked on both short and long path. Mid-afternoon seems to be the best long path, while the short path to Asia and the Middle East is fair to good from 1000 UTC. The Southern Cross DX Net on 14255 kHz has been very active with anything up to twenty DX stations on frequency, operating from 1100 UTC and featuring some of Australia's top net controllers.

The "W - SP0" Award

The worked SP0 Award is issued by the Bydgoszcz Section of PZK for confirmed contacts with different Polish Amateur Stations using the special prefix SP0. No time, bands or modes limits. The award is attainable by all licensed amateur operators and Short Wave Listeners, if you possess the three QSLs from SP0 stations for European applicants, or two QSLs from SP0 stations if you're a DX applicant. The award fee is nine IRCs or \$US6.00. Send this together with your verified list to PZK Ot Bydgoszcz Award Manager, PO Box 37, 85 - 950 Bydgoszcz, Poland.

Hong Kong Amateur Radio Transmitting Society Award Series

In response to a number of requests, please consider the Award Series from the Hong Kong Amateur Radio Transmitting

Society. General requirements - GCR requested; cards not wanted. Apply to Awards Manager, HARTS, GPO Box 541, Hong Kong.

The Catch 22 Award

Contact stations located on the 22nd parallel North, as per the list below, after 1 January 1980. A VS6/VR2 contact is required. Awarded in three Classes: Class 3 = 15 countries, Class 2 = 20 countries, Class 1 = all 25 countries. The fee is \$US7.00 or equivalent. Upgrade stickers \$1.00 each.

The Countries List

- | | |
|---------------------|--------------------|
| 1. VS6 Hong Kong | 14. SU Egypt |
| 2. XX9 Macao | 15. 5A Libya |
| 3. BY China | 16. TT8 Chad |
| 4. BV Taiwan | 17. 5U7 Niger |
| 5. XV Vietnam | 18. 7X Algeria |
| 6. XW Laos | 19. TZ Mali |
| 7. XZ Myanmar | 20. 5T5 Mauritania |
| 8. S2 Bangladesh | 21. CN Morocco |
| 9. VU2 India | 22. CB Bahamas |
| 10. A4 Oman | 23. CO Cuba |
| 11. A6 UAE | 24. XE Mexico |
| 12. HZ Saudi Arabia | 25. KH6 Hawaii |
| 13. ST Sudan | |

The Firecracker Award

Requires six contacts with different Hong Kong stations, after 1 January 1964. Stations in zones 18, 19, and 24 to 30 require 10 contacts with VS6/VR2 stations. The fee is \$US2.00, \$AUS2.00 or 10 IRCs.

The Nine Dragons Award

Make one contact with a country in each of Zones 18, 19, and 24 to 30 inclusive. The contact for zone 24 must be from Hong Kong. Stations within the nine listed zones require two contacts in each zone, with two contacts with VS6/VR2 stations. Contacts after 1 January 1979. The award fee is \$US3.00, \$AUS3.00 or 10 IRCs.

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magazine!**

WIA DXCC Standings

Phone Honour Roll

Call sign	Countries
VK5UO	99 /101
VK6RU	326/380
VK5MS	326/379
VK4KS	326/372
VK4LC	326/372
VK5WO	326/358
VK6HD	326/350
VK6LK	326/350
VK4RF	326/344
VK3QI	326/339
VK3AKK	326/337
VK2FGI	326/331
VK3DYL	326/331
VK5QW	326/331
VK5XN	325/345
VK4UA	325/338
VK4OH	325/331
VK3CSR	324/332
VK1ZL	324/329
VK5EE	322/327
VK6NE	320/335
VK3YJ	318/323
VK3OT	315/327

General Listing

VK7BC	314/323
VK3AMK	313/329
VK6AJW	312/317
VK4AAR	309/312
VK6VS	309/312
VK2DEJ	307/312
VK6PY	307/312
VK5WV	306/325
VK3RF	304/311
VK3WJ	303/308
VK6RO	301/306
VK3JI	298/312
VK2WU	292/296
VK4DP	289/300
VK2AKP	289/294
VK4BG	287/302
VK2DTH	287/289
VK2APK	285/313
VK3CYL	283/290
VK3DU	282/290
VK5OU	281/286
VK3VU	272/275
VK4OD	272/275
VK3GI	264/267
VK3VQ	259/276
ZS6IR	259/262
VK2SG	253/274
VK2AVZ	251/257
VK4QO	251/255
VK3DP	246/249
VK2PU	244/247
VK6YF	238/241
VK2CKW	234/237
PS7AB	233/237
VK3DS	226/336

VK2ETM	226/227
VK4SJ	220/
VK5IE	219/221
VK5BO	218/222
VK3UY	217/217
VK6APW	216/217
VK3DD	214/217
VK4CY	211/212
VK4XJ	204/216
VK3DVT	201/203
ON6DP	200/202
VK4ICU	200/202
VK4KRP	199/201
VK2VFT	198/201
VK4DDJ	198/198
VK3CIM	196/199
VK4AU	191/191
VK6BQN	186/190
KA1TFU	176/179
VK4LV	174/176
WA1MKS	171/
VK7TS	170/171
VK2BQS	162/165
VK4BAY	158/160
VK2NO	157/
VK4IT	153/154
7J1AAL	149/150
VK4ARB	149/150
VK4DMP	147/148
VK4IL	143/
VK3DNC	141/142
VK3DQ	141/
VK2SPS	139/141
VK6LC	139/140
VK2EQ	139/
VK4CHB	137/138
VK4VJ	135/137
VK6LG	135/135
TI2YLL	129/
LU5EWO	125/
SM6PRX	122/126
VK3TI	122/125
VK7WD	115/116
VK3BRZ	114/116
VK4NJQ	111/115
VK4VIS	111/113
VK6NV	111/113
VK5SATN	110/112
VK5GZ	108/110
VK5AGM	105/107
VK4LV	105/
NAJED	104/105
VK3EHP	103/105
JN6MIC	103/104
VK4BJE	102/104
JH3OHO	101/103
VK2CMV	100/102
VK6APH	100/101
VK4KGE	099/101

CW

Honour Roll

Call sign	Listings
VK3QI	326/337
VK6HD	324/344

General Listing

VK3XB	309/343
VK4RF	306/332
VK5WO	300/315
VK3KS	295/322
VK6RU	275/319
VK2APK	274/304
VK3JI	267/291
VK3AKK	267/272
VK3DQ	245/
VK7BC	230/239
VK3DP	230/233
VK4LV	223/230
VK4DA	221/223
VK2CWS	210/212
VK4DP	203/214
VK6PY	191/194
VK4OD	185/188
VK3CIM	184/185
VK4ICU	174/
VK6HW	166/169
VK5GZ	166/168
VK6MK	165/167
VK4CY	162/
VK5BO	159/184
VK3DNC	154/157
VK4XJ	150/163
VK5UO	144/145
VK4UA	143/155
EA6AAK	138/
VK7DQ	137/138
VK2SG	136/148
VK4KS	126/134
VK7TS	125/
VK2TB	123/125
VK4AAR	121/123
VK3AGW	119/120
VK4CMY	117/119
VK2AKP	115/117
VK5BWW	110/111
VK5QJ	107/109
VK2FYM	106/108
VK8KV	102/103
VK2CXC	101/103

Open

Honour Roll

Call sign	Countries
VK6RU	326/380
VK4KS	326/372
VK5WO	326/362
VK4RF	326/361
VK6HD	326/351
VK3QI	326/340
VK3AKK	326/337
VK5QW	326/330
VK4UA	325/340
VK3JA	324/371
VK7BC	319/327
VK3OT	318/330

General Listing

VK3AMK	313/329
VK3XB	311/340
VK3JI	311/339
VK6PY	309/316

VK4AAR	309/312
VK6RO	307/312
WA3HUP	306/330
VK4DP	304/317
VK3DP	296/299
VK4BG	294/312
VK2APK	292/328
VK2SG	289/314
VK2AKP	289/294
VK4OD	285/288
VK3CYL	283/290
VK3VQ	274/291
VK3UY	272/274
VK5BO	264/301
VK3DQ	262/
TF5BW	260/264
VK4CY	259/262
VK4LV	242/249
VK2ETM	239/240
VK3CIM	236/239
VK4XJ	233/249
VK4ICU	233/235
VK5UO	230/233
VK6APW	223/224
VK4DA	222/224
WA5VGI	216/218
VK2CWS	214/216
VK2VFT	202/205
VK7TS	201/202
VK3DNC	185/187
VK5GZ	178/180
VK2BQS	176/179
PR7CPK	174/175
VK6MK	170/172
VK6NV	165/166
VK2NO	158/
VK2CXC	150/152
VK4CHB	145/147
VK6LC	142/144
VK2SPS	140/142
VK4NJQ	133/139
VK4EZ	129/138
YB8GH	127/129
VK7HV	114/117
VK5BWW	111/112
VE7BS	106/107
VK3COR	102/104
VK3VB	102/104
SM7WF	101/
VK7DS	099/102

RTTY

Call sign	Countries
VK3EBP	198/200
VK2SG	157/160
VK2BQS	115/117

*PO Box 2175 Caulfield Junction 3161

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Contests

Peter Nesbit VK3APN - Federal Contest Coordinator*

Contest Calendar Feb - Apr 96

Feb 10/11	PACC CW/SSB DX Contest	(Jan 96)
Feb 10/11	Spanish RTTY Contest	(Jan 96)
Feb 17/18	ARRL DX CW Contest	(Jan 96)
Feb 23/25	CQ 160 Metre SSB Contest	(Dec 95)
Feb 24/25	NZART National Field Day	
Feb 24/25	RSGB 7 MHz CW Contest	(Jan 96)
Feb 24/25	UBA Belgium CW DX Contest	(Dec 95)
Mar 2/3	ARRL DX SSB Contest	(Jan 96)
Mar 9/10	BERU CW Contest	
Mar 16/17	WIA John Moyle Field Day	
Mar 16/17	BARTG RTTY Contest	
Mar 23/24	CQ WPX SSB Contest	
Apr 6/7	SP DX Contest	
Apr 6/7	Israel DX Contest	
Apr 12/14	Japan International High Band CW	
Apr 27/28	Helvetia DX Contest (Switzerland)	

Have you noticed the amount of impatience creeping into our on-air activities these days? So many of us are in such a hurry to make QSOs, and then get them over and done with, that we seem to be missing the point of why we became amateurs in the first place. Perhaps I'm getting out of touch, but I'd always thought the aim of our hobby was to enjoy ourselves.

This is nowhere more evident than in contesting. We have long become used to the "gun" contesters who, with their big signals and good copying skills, achieve rates many of us only dream about. However, what about those who would like to be guns, or worse yet think they are, but really aren't?

I'm speaking of those massive signals, often (but not only) emanating from Eastern Europe, ripping along at 35 wpm calling "CQ TEST", and pausing for replies for a second at most. You are lucky to get half way through your callign, before our hero is calling CQ again. Since he apparently doesn't hear you, you reduce speed. Waste of time. So you increase to his crazy speed, and sometimes he seems to hear you because he sends QRZ VK? a few times, but of course he has no hope of copying you because such speeds are much too fast for the level of QRM. So you sit bemused for a while, listening to half a dozen others going through the same motions as you just did, before also giving up. All the while, Mr Lid is blating out CQs as if his life depended on it, completely oblivious to the stations calling him, and losing valuable multipliers into the bargain. If only he slowed down a little, and listened properly from time to time, both he (and us) would make more QSOs!

Another aspect of excessive speed is how the speed-kings fill their contest logs with miscopied calligns and exchanges. Such QSOs are struck out, of course, and all the entrant has achieved is to waste his (or her) time making them, and possibly lose multipliers as well. When the competition is close, places can (and do) change on the strength of logging accuracy. Having just checked the logs for the 1995 VK/ZL Contest, I should know! A little extra effort to get it right, at the outset, can make all the difference.

Whilst on the subject, I have noticed this speed-mongering extending to ordinary QSOs as well. A couple of mornings ago I heard a moderately strong station working through a dog-pile of Europeans. His overs comprised "callign 599 K" and, in correct dog-pile fashion, he was managing to avoid sending his own callign for long periods on end, so I jumped in hoping to get his callign later. Imagine my embarrassment when he turned out to be a VK2! Even worse, the same experience was repeated a few minutes later with a VK3! Now I could understand if the stations were rare, or even moderately unusual. But VK??? I mean, really!

Not all is gloom, however. A couple of months ago I had the pleasure of working a 3D2 who seemed pleased to chat about the weather, his rig, who he was, how long his DXpedition would be on the island, etc. We had quite an enjoyable QSO, and he wasn't itching to sign off and resume the 599 K nonsense. It reminded me of the DX ragchews which were so common in past years and, for once, the nice log entry really meant something.

By all means we should do our best to score well which, after all, is what

contesting is about. However, as I've often said, we shouldn't lose sight of our broader goals, which is not only to enjoy ourselves, but also to put something back for the benefit of others. A log full of letters and numbers, gained without care in getting it right or concern for others, is a hard, and ultimately meaningless slog; but a log full of real QSOs, where you have put in your best efforts and helped others at the same time, is much more rewarding. As they say, it's not the destination that counts, but the journey you take to reach it. Happy travelling!

Thanks to VK1PJ, VK2BQQ, VK3ZC, PA3BFM, ZL1AAS, CQ, Radio Communications, QST, and Break-In.

Jock White National Field Day (NZART)

0300-1200z Sat 24 Feb &
1800-0300z Sun 25 Feb

This contest is open to portable ZL stations, and overseas stations. Both 80 and 40 m can be used, phone and CW. Crossmode contacts are not permitted. Sections include CW; phone; mixed mode; 80 m only; "natural" power; QRP max 5 W Q/P. Exchange RS(T) plus serial number. ZLs will add their branch number.

This contest is divided into 18 one-hour

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periods, changing over on the hour. Stations can be contacted once per hourly period, per mode, per band. Note that two consecutive QSOs with the same station are not permitted under the following circumstances, unless five minutes have elapsed: (a) when changing modes but staying on the same band; (b) at the end of one period and the start of the next.

Score 10 points per QSO, and multiply by the total number of branches worked on phone and CW. Multipliers are counted separately on 80 and 40 m, and on phone and CW, ie the same multiplier can be counted up to four times. Separate logsheets are preferred for each period, except where periods contain only a few QSOs, in which case more than one can be on the same page, if they are ruled off.

The summary sheet should show all usual details, plus a summary of the QSOs and multipliers per band and mode. Send logs to S White ZL2AHC, 19 Rossport Street, Johnsonville, Wellington, New Zealand to arrive by 25 March 1996.

Commonwealth Contest (BERU)

CW only: 1200z Sat to 1200z Sun, 9-10 March

This popular contest takes place each year on the second full weekend in March, and is intended to promote contacts between stations in the British Commonwealth and Mandated Territories. Categories are single operator, single and multiband, and receiving. The use of spotting nets, packet clusters, etc is precluded. Contacts may be made with any station using a British Commonwealth prefix, except those within the entrant's own call area. Use 80-10 m, keeping within the bottom 30 kHz of each band, except when contacting Novice stations above 21030 and 28030 kHz.

Exchange RST and serial number commencing with 001. Score five points per QSO, with a bonus of 20 points for each of the first three QSOs with each Commonwealth call area on each band (note that for the purpose of this contest, the entire UK area counts as one call area).

Several "headquarters" stations will be active during the contest, and will send "HQ" after their serial number to identify themselves. Each HQ station counts as an additional call area, and therefore attracts the 20 point bonus. Entrants may contact their own HQ station for points and bonuses.

Show duplicate contacts in the log with zero points. Entrants making more than 80 QSOs should include a sorted alphabetical list of the callsigns appearing in the log, together with either the serial number sent or the time of contact beside the callsign. Separate logs and lists of bonuses claimed

are required for each band. Single-band entrants should claim points for contacts on the selected band, but should also submit details of QSOs made on other bands for adjudication purposes.

Include a cover sheet showing standard details, and send the log postmarked by 8 April to RSGB HF Contests Committee, c/o S Knowles G3UFY, 77 Bensham Manor Road, Thornton Heath, Surrey, CR7 7AF, England. Airmail is advised, as late logs may be treated as check logs. The Senior and Junior Rose Bowls will be awarded to the overall leader and runner-up respectively, and Certificates of Merit to the leading stations in each category and call area on each band.

The following call areas are recognised for the purpose of scoring in the 1995 Commonwealth Contest: A2, A3, AP, C2, C5, C6, C8/9, CY9, CY0, G/GB/GD/GI/GJ/GM/GU/GW (all one area), H4, J3, J6, J7, J8, P2, S2, T2, T3, T31, T32, T33, T3, V2, V3, V4, V5, V8, VE1, VE2, VE3, VE4, VE5, VE6, VE7, VE8, VK1, VK2, VK3, VK4, VK5, VK6, VK7, VK8, VK9C, VK9L, VK9M, VK9N, VK9W, VK9X, VK0 (Heard Isl), VK0 (Macquarie Isl), VK0 (Antarctica), VO1, VO2, VP2E, VP2M, VP2V, VP5, VP8 (Falkland Isl), VP8 (S Georgia), VP8 (S Sandwich Isl), VP8 (S Shetland Isl), VP8 (S Orkney Isl), VP8 (Antarctica), VP9, VQ9, VR6, VSG/VR2 (Hong Kong), VU, VU4 (Andaman & Nicobar Isl), VU7, Y1, Y2, Z2, ZB2, ZC4, ZD7, ZD8, ZD9, ZF, ZK1 (N Cook Isl), ZK1 (S Cook Isl), ZK2, ZK3, ZL0 or /ZL (NZ reciprocal calls), ZL1, ZL2, ZL3, ZL4, ZL5, ZL7, ZL8, ZL9, ZS1, ZS2, ZS3, ZS4, ZS5, ZS6, ZS8, 3B6/7, 3B8, 3B9, 3DA, 4S, 5B4, 5H, 5N, 5W, 5X, 5Z, 6Y, 7P, 7Q, 8M, 8Q, 8R, 9G, 9H, 9J, 9L, 9M, 9M6/8, 9M0, 9Y, GB5CC (RSGB HQ station), various other HQ stations.

CQ WPX Contest

SSB: 0000z Sat to 2400z Sun, 23-24 March

CW: 0000z Sat to 2400z Sun, 25-26 May

This contest is sponsored by CQ Magazine, and the objective is to contact as many stations worldwide as possible on 1.8-30 MHz (except 10, 18 & 24 MHz). Categories include single operator (either single or all band), subdivided according to power (unrestricted, low power max 100 W O/P, and QRPP max 5 W O/P), and multioperator (either single or multitransmitter, all band only). Single operator stations are where one person performs all operating, logging, and spotting functions. The use of DX spotting nets places the station in the multioperator single transmitter category. Multi-multi stations must have all transmitters located within a 500 m diameter circle or within the property limits of the licensee's address,

whichever is greater. All antennas must be physically connected by wires to the station transmitters and receivers.

Exchange RS(T) plus a three digit number starting at 001. Continue to four digits if past 1000. Multitransmitter stations must use separate numbers for each band. Score three points (14-30 MHz) or six points (1.8-7 MHz) for contacts with stations on different WAC continents, and one point (14-30 MHz) or two points (1.8-7 MHz) for contacts with stations within the same WAC boundary. Contacts with stations in the same country are permitted for multiplier credit but have zero point value.

The multiplier is the total number of prefixes worked on all bands (each prefix is counted only once regardless of the number of different bands on which it is worked). A "prefix" is the unique letter/numeral combination forming either the first part of the callsign, or else the normal country identifier for stations using their home callsigns in another DXCC country. For example, N8, W8, AG8, Y22, Y23, HG7, HG73 are all separate prefixes. The prefix for both N8ABC/KH9 and KH9/N8ABC is KH9. KH6XXX operating from Ohio could sign /W8, /N8, /K8, or any other prefix authorised for that district. Portable designators without numbers will be assigned zero after the letter prefix, eg N8ABC/PA becomes N8ABC/PA0. Any calls without numbers will be assigned a zero after the first two letters, eg RAEM becomes RA0EM. Suffixes indicating maritime mobile, mobile, portable, alternate location, and licence class do not count as prefixes (eg /MM, /M, /P, /A, /E, /J). The final score is QSO points x multiplier.

QSP News

Australian ICARE Co-ordinator

Brenda Edmonds VK3KT, the WIA Federal Education Co-ordinator, has been invited by the Chairman of STELAR and ICARE to become the country co-ordinator of ICARE for Australia. She has, of course, accepted with enthusiasm. The promotion of amateur radio in schools and in education has been an interest of Brenda's for many years.

For information about ICARE and STELAR see this month's *Education Notes*.

Logs must show times in GMT, with breaks clearly marked. Show prefix multipliers only the first time they are worked. Logs must be checked for duplicates, correct points, and prefix multipliers. Logs must be accompanied by a sorted alphanumeric list of prefix multipliers, and a summary sheet showing call, name, address, category, power, scoring information, and a signed declaration that all contest rules and radio regulations were observed. Logs may also be submitted on 3-1/2 or 5-1/4 DOS disk in ASCII format (.BIN, .RES, .DBF, .WKS also acceptable), providing a sorted multiplier file and a paper summary sheet are included. Send logs postmarked by 8 May (SSB) or 8 July (CW) to WPX Contest, 76 N Broadway, Hicksville, NY 11801, USA. Indicate SSB or CW on envelope.

A comprehensive range of trophies and plaques is offered, and certificates will be awarded to the highest scoring station in each category, country and VK call area. To be eligible for awards, single operator stations must show at least 12 hours operation, and multioperator at least 24 hours operation. Single band entries showing points claimed for more than one band will be judged as multiband unless otherwise specified. Where returns justify, second and third place awards will also be made.

Results of 1995 Japan International DX Contest

(call/band/score/QSOs/mult; * = certificate winner)

Low Band Section:

VK2AYD	40	5670	135	42
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High Band Section:

VK4ICU *	10	2500	100	25
VK2AYD *	15	8512	224	38
VK4XA	15	8442	201	42
VK2APK *	20	11505	295	39
VK2BQQ *	A	10557	153	69
VK4TT	A	4370	95	46
VK5GN	A	3827	89	43
VK4CRR *	QRP	6370	182	35

Results of 1994 CQ-M DX Contest

(call/section/score/QSOs/mult):

VK4TT	20	CW	6480	90	24
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Results of 1995 PACC DX Contest

(call/score/QSOs/mult):

VK4TT	240	24	10
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Results of 1995 ARRL RTTY Roundup

(call/score/QSOs/mult/hrs):

VK6GOM	7515	167	45	21
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1996 John Moyle Contest Rules

Presented by Phil VK1PJ

Well, once again those who enjoy a weekend in the bush should be planning for this year's John Moyle Field Day. The rules are the same as last year.

I hope to be on air the weekend before the contest, family and work commitments permitting, to help anyone with rule interpretations, etc. My planned schedule is 14.275 MHz at 1200 EST and 3.570 MHz 2030 EST (approx) on Sunday, 10 March. For those without HF call signs, perhaps you can join one of the nets as a second operator. If anyone wishes to contact me privately, my home phone number is 06 292 3260, and my address is shown in the Log Submission section below.

Overview

1. The aim is to encourage and provide familiarisation with portable operation, and provide training for emergency situations. The rules are therefore designed to encourage field operation.

2. The contest takes place on the third weekend in March each year, and this year (1996) runs from 0100 UTC Saturday to 0059 UTC Sunday, 16-17 March.

3. The contest is open to all VK, ZL and P2 stations. Other stations are welcome to participate, but can only claim points for contacts with VK, ZL and P2 stations.

4. Entries shall consist of one choice from each of the following (eg six hour, portable, single operator, phone, VHF/UHF):

- a. 24 or 6 hour;
- b. Portable, Home, or Receive;
- c. Single or Multiple operator;
- d. Phone, CW, or Open mode;
- e. HF, VHF/UHF, or All Band.

Scoring

5. Home stations for all sections shall score:

- a. two points per QSO with each portable station;
- b. one point per QSO with other home stations.

6. Portable HF stations shall score two point per QSO.

7. Portable stations shall score the following on 6 m:

- a. 0-49 km, two points per QSO;
- b. 50-99 km, 10 points per QSO;
- c. 100-149 km 20 points per QSO;
- d. 150-199 km 30 points per QSO;
- e. 200-499 km 50 points per QSO;
- f. 500 km and greater, two points per QSO.

8. Portable stations shall score the following on 144 MHz and higher:

- a. 0 to 49 km, two points per QSO;
- b. 50 to 99 km, 10 points per QSO;
- c. 100 to 149 km, 20 points per QSO;
- d. 150 km and greater, 30 points per QSO.

9. For each VHF/UHF QSO where more than two points is claimed, either the latitude and longitude of the station contacted, or other satisfactory proof of distance, must be supplied.

Log Submission

10. Logs must be accompanied by a summary sheet showing call sign, name, mailing address, section entered, number of contacts, claimed score, location of the station during the contest, and equipment used. For multioperator stations, the call signs and signatures of all operators should be included. If any VHF/UHF QSOs have been made which qualify for more than two points, the latitude and longitude of the station during the contest must be included.

11. The summary sheet must include the following declaration signed by the operator or, in the case of a multiple operator station, one of the licensed station operators: "I hereby declare that this station was operated in accordance with the rules and spirit of the contest".

12. Logs must be postmarked no later than 26 April 1996, and forwarded to John Moyle Contest Manager, 33 Willoughby Cres, Gilmore, ACT 2905, Australia. An ASCII text copy on a MS-DOS floppy disc would be most helpful, with the following alternative formats also acceptable: Wordstar, Word, WordPerfect, dBase3 & 4, Lotus 123.

Certificates and Trophy

13. At the discretion of the Contest Manager, certificates will be awarded to the winners of each portable section. Note that entrants in a 24 hour section are ineligible for awards in a six hour section.

14. The Australian station with the highest CW score will be awarded the President's Cup, a perpetual trophy held at the WIA Federal Office, and will receive an individually inscribed wall plaque as permanent recognition.

Disqualification

15. General WIA contest disqualification criteria, as published in Amateur Radio from time to time, applies to entries in this contest. Logs which are illegible or excessively untidy are also liable to be disqualified.

Definitions

16. A portable station comprises field equipment operating from a power source independent of any permanent facilities, eg batteries, portable generator, solar power, wind power.

17. All equipment comprising the portable station must be located within an 800 m diameter circle.

18. A single operator station is where one person performs all operating, logging, and spotting functions.

DICK SMITH ELECTRONICS

EX-DEMO CLEARANCE! YAESU FT-1000



**HURRY,
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STOCKS!**

Now's your chance to get the 'Best of the Best' at a bargain price! Right now you can pick up an ex-demo FT-1000 deluxe HF all-mode transceiver and save \$1000. Here's what the experts have to say about this incredible transceiver...

On Operation

"The layout of the front panel of the FT-1000 is just right...I reckon the FT-1000 is (operationally) far less complex than either the Icom IC-781 or the Kenwood TS-950S." - ARA
"I found the FT-1000 easier to learn and use than any other radio in its class." - QST

On Documentation

"Clearly written and complete, and includes a complete set of schematics and many high quality photos." - QST
"The quality of printing and presentation of the book is the best I have ever seen..." - ARA

On the Receiver

"...this rig has a very strong receiver; it has the best overall performance (in terms of sensitivity and dynamic range) and the highest third order input intercept of any commercial radio ever tested in the ARRL lab." - QST
"The direct digital synthesizer works very well and produces receiver performance that sets new standards." - AR

"I found the receiver in the FT-1000 to be astonishingly sensitive and immune to cross modulation..." - ARA

Transmitter - SSB

"The FT-1000 is easy to adjust and use...The processor adds quite a bit of punch to SSB signals; hams I worked on SSB with the FT-1000 gave me good audio quality reports" - QST

Transmitter - CW

"CW keying was a delight... power output was checked in the CW mode and found to be well in excess of 200 watts on all bands..." - AR

"CW operation with the internal keyer is a breeze..." - QST

Conclusion

"...the FT-1000 represents unbelievable value..." - AR
"It's an excellent set worthy of accolades and rave..." - ARA
"...the FT-1000 needs little for me to consider it the ultimate contesting and DXing machine available today..." - QST
* Review with optional filters fitted.

The FT-1000's combination of Direct Digital Synthesis, high output power, ultra-high performance receiver and easy to use controls put it far ahead of the competition. Hurry in today and check out our limited number of ex-demo models all with a full 2 year warranty. Wouldn't you rather be using the "Best of the Best"?
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(Ex-demo models only, microphone extra)

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Purchase an FT-1000, and we'll provide an MD-1 Desk Microphone, SP-5 or SP-6 extension speaker, BPF-1 Band Pass Filter, TCXO-1 Temp Compensated Oscillator, and four 455kHz 3rd IF crystal filters for just \$500 (valued at over \$1300 if purchased separately). This offer is only valid from 20/10/95 when purchased with the FT-1000, and is subject to accessory availability. Some models may be shop soiled. However all come with a full 2 year warranty.

**Ex-demo models units are available at these stores:
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252 Pulteney St, Adelaide (08) 223 4122**

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YAESU FT-2200 2m Mobile Transceiver

A compact, fully-featured 2m FM transceiver with selectable power output of 5, 25 and 50 watts, it includes the latest convenience features for more enjoyable mobile or base station operation. Built around a solid diecast chassis, it provides 49 tuneable memories, a large variety of scanning modes, an instant recall CALL channel, 7 user-selectable channel steps from 5kHz to 50kHz and is just 140 x 40 x 160mm (not including knobs). Backlighting of the large LCD screen, knobs and major buttons is even automatically controlled to suit ambient light conditions. Also provided is a 38-tone CTCSS encoder, DTMF-based paging and selective calling with auto page/forwarding features, and 10 DTMF auto dial memories. The LCD screen provides a highly legible bargraph signal/PO meter plus indicators for the various paging and repeater modes. An optional internal DVS-3 digital recording/playback board can also be controlled from the front panel, giving even greater messaging flexibility. Supplied with an MH-26D8 hand microphone, mobile mounting bracket and DC power lead.

Cat D-3635

\$699



YAESU FT-990 HF All-Mode Base Transceiver

We're overstocked on ex-demo transceivers, so take advantage of this opportunity to save \$500 on an excellent HF base-station rig! The FT-990 offers many of the features of the legendary FT-1000, only in a more compact and economical base station package. Together with clear front-panel layout and labelling, its large back-lit meter and uncluttered digital display allows for easy operation. The receiver uses a wide dynamic range front end circuit and two DDSs to provide a very low noise level and excellent sensitivity over the 100kHz to 30MHz range. Transmitter output is 100W on all HF Amateur bands (SSB, CW, FM), with high duty cycle transmissions allowed. The internal auto antenna tuner and an in-built power supply are standard features, while the customizable RF speech processor and switched capacitance audio filtering facilities are unique to the FT-990. Other features include IF Shift and IF Notch filters, IF bandwidth selection, 90 memories and one-touch band selection.

Cat D-3260

Ex-Demo SAVE \$500!

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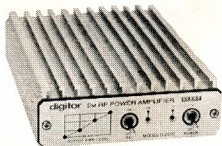
2m RF Power Amplifier

Boost your 2m hand-held's performance with this compact amplifier. Works with 0.3 to 5W input and provides up to 30W RF output, plus has an in-built GaAsFet receive pre-amp providing 12dB gain. A large heatsink and metal casing allow extended transmissions at full output, and a mobile mounting bracket is supplied for vehicle use. Requires 13.8V DC at 5A max. Size 100 x 36 x 175mm (W x H x D).

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Max. Power: 200W
Length: 2.5m
Type: 2 x 5/8 wave (2m)
4 x 5/8 wave (70cm)
Connector: SO-239 socket

\$199

Cat. D-4830

2m/70cm GST-3

Frequency: 144-148MHz, 430-440MHz
Gain: 7.9dB on 2m, 11.7dB on 70cm
Max. Power: 200W
Length: 4.4m
Type: 3 x 5/8 wave (2m)
7 x 5/8 wave (70cm)
Connector: SO-239 socket

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Quality Revex wide-band SWR meter, offering 2 in-built sensors for 1.8MHz to 525MHz coverage! Provides measurement of 3 power levels (3W, 20W, 200W), and SWR. Uses an N-type socket for the VHF/UHF sensor to ensure minimal loss. Measures 120 x 80 x 85mm.

Cat D-1375

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Rugged HF 5-Band Trap Vertical Antenna

The rugged 5BTV incorporates Hustler's exclusive trap design (25mm solid fibreglass formers, high tolerance trap covers and low loss windings) for accurate trap resonance with 1kW (PEP) power handling. Wide-band coverage is provided on the 10, 15, 20 and 40m bands (SWR typically 1.15:1 at resonance, <2:1 SWR at band edges) with 80kHz bandwidth typical on 80m at less than 2:1 SWR. An optional 30m resonator kit can also be installed without affecting other bands. High strength aluminium and a 4mm (wall thickness) extra heavy-duty base section guarantee optimum mechanical stability. At just 7.65m, the 5BTV can be ground mounted (with or without radials, although radials are recommended), or it can be mounted in an elevated position with a radial system. Unlike other antenna designs, the 5BTV can be fed with any length of 50ohm coax cable.

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DICK SMITH ELECTRONICS



Thought For The Month

"If we all did the things we are capable of doing, we would literally astound ourselves." Thomas A Edison.

VK6 Notes

Bruce Hedland-Thomas VK600

Notice of Annual General Meeting

It is hereby notified that the Annual General Meeting of the West Australian Division of the Wireless Institute of Australia will be held on 30 April 1996 following the General Meeting which commences at 8 pm. The meeting will be held at the Westrail Centre, East Perth.

Agenda

1. Consideration of the council's annual report
2. Consideration of the financial report
3. Consideration of other reports
4. Election of office bearers, viz president and vice-president of the Division and seven other councillors
5. Election of two auditors
6. Appointment of a patron
7. General business which has been duly notified.

Notice of Motion for the AGM must be received by the secretary not less than 42 days prior to the meeting and must be signed by at least three members.

Nominations of a candidate for election to council must be received by the secretary in writing not less than 42 days prior to the meeting, with an intimation that such candidates are willing to act. A candidate may submit a statement not exceeding 200 words outlining his or her case for election, and experience. Each nomination shall be signed by two members proposing the candidate. Candidates must possess a current amateur licence.

Proxies

Any financial member entitled to vote may appoint a proxy, who must also be a financial member entitled to vote, to speak and vote on his/her behalf. Each such proxy must be in the hands of the secretary prior to the meeting and be in the following form: I,, a member of the Institute, hereby appoint..... also a member of the Institute, to act for me as my proxy, and in my name to do all things which I myself being present could do at the meeting of the Institute held on

Signed:
Witness:
Date:

"QRM" News from the Tasmanian Division

Robin L Harwood VK7RH

Just a reminder that the Divisional Annual General Meeting will be held on Saturday, 21 March 1996 at 1400 hours Tasmanian Standard Time at the Domain Activity Centre in Hobart.

All Annual Reports should be forwarded to the Divisional Secretary by 22 February at the address given in the Divisional Directory on page three of this issue of Amateur Radio. Nomination forms for Divisional Council will have been forwarded to each Branch by now. They can also be obtained by writing to the Divisional Secretary. Nominations can only be accepted from current financial members of this Division and those proposing and seconding the nomination must also be current financial members.

Nominations close on Friday, 1 March 1996 with the Divisional Secretary who is also returning officer. If there are more candidates than vacant positions, an election will be necessary and ballot papers will be forwarded 10 days prior to the AGM to all current financial members.

Notices of Motion should also be forwarded by 22 February to the Divisional address and the proposer and seconder again must be current members. Please note that there will be several Notices of Motion put forward by our Honorary Solicitor to tidy up the Divisional Articles of Association.

It is with regret that we announce that Edgar Nicholls VK7RY passed away late in December. Edgar was active on two metres and on 80 metres and he will be missed in VK7.

On 9 December last year, Council met in Launceston and quite a deal of time was given to revising the Articles of Association. Mr Phil Corby VK7ZAX, Honorary Solicitor, was in attendance and briefed Council as to the history and requirements of the current Articles. Some of these will need to be revised and updated into the 21st Century, which is only five short years away. As mentioned earlier, these will be brought as Notices of Motion on 23 March. Council benefited from Mr Corby's assistance and advice, as we went through each article in detail.

The SMA advised this Division that it is no longer permissible to use the AX7ITU prefix annually on 17 May. The use of this prefix is confined to Special Commemorative Events such as the Bicentennial and the Olympic Games. They suggested we could apply for a license to operate VK7ITU. This has been referred to the Divisional Awards Manager, VK7BE.

Several repeaters in the state are now interlinked. By inserting a 141.3 Hz tone it

is now possible to key several repeaters. For example, an operator in Hobart can talk via VK7RAF which is now on 146.65 MHz and, by inserting the tone, can access VK7RAB in the North on 438.55 MHz. VK7RNE in the Fingal Valley has now been added to this chain. This repeater is on 146.725 MHz. So it is possible to interlink through any of these sites, with the addition of the appropriate tone.

Please note that the name of the Northwest Telephone BBS, operated by Tony Bedelph VK7AX, is now the ATV and Northwest BBS. The number is unchanged and will still carry WICEN news from other sources.

All Branch meetings this month will be Annual General Meetings. The Southern Branch AGM will be held on Wednesday, 7 February at the Domain Activity Centre at 2000 hours EADT; the Northwestern Branch will be meeting, presumably at the Penguin High School at 1945 hours EADT, on Tuesday, 13 February; and the Northern Branch will be meeting at St Patrick's College, Mount Leslie Road, Prospect (in the Staff Common Room) on Wednesday, 14 February at 1930 hours EADT. ar

WIA News

Solar Cycle Minimum Near

It is likely that the solar cycle minimum will be reached this year, probably between June and December, according to IPS Radio and Space Services.

Sunspot groups identified as most probably belonging to the new cycle (No 23) were observed to appear between May and September last year. Typically, the minimum does not occur until at least 12 months following the appearance of the first spot group of the cycle, said IPS radio and Space Services.

The first spot of Cycle 20 appeared in September 1963 and the Minimum occurred in October 1964. Cycle 21's first spot appeared on 15 November 1974, and the minimum followed June 1976, while with Cycle 22, the first spot appeared on 31 March 1985 and minimum occurred in September 1986.

"On the basis of past behaviour, we would thus expect solar minimum to occur between June and December 1996, and the duration of Cycle 22 to lie between 9.7 and 10.3 years," said IPS radio and Space Services.

Education Notes

Brenda M Edmonds VK3KT* Federal Education Coordinator

In my last column in December 1995 *Amateur Radio* magazine, I wrote of the formation of ICARE, the International Council for Amateur Radio in Education.

A short time after writing the column I received a response from the Chairman, Richard Horton G3XWH, who is also Schools Liaison Officer for the RSGB. This, as well as promising me a copy of the Conference Proceedings, included fuller information on ICARE and, among other items, copies of a couple of issues of AMRED (Amateur Radio in Education) the magazine of the STELAR group (Science and Technology through Educational Links with Amateur Radio). The STELAR group organised and hosted the conference at which ICARE was established, with sponsorship from Trio-Kenwood and the RSGB.

I think I have mentioned these magazines previously. For a small publication (about 20 pages of A5, ie half an AR page size) they pack in a surprising amount. Comments from the Editor or

Chairman, technical information, building projects, historic items and current news are there, all in an easy-to-read text and with clear diagrams where appropriate. It is obvious that these magazines are produced by a group of enthusiasts, and that amateur radio is active in schools in Britain. There are over 120 schools listed as affiliates, with nearly half of them having call signs.

The STELAR group also offers assistance to teachers, who do not hold an amateur licence, to help them gain a licence or to assist with amateur radio activities in their schools. One six day live-in crash course was held last Easter, and another is planned for next Easter. Again, commercial sponsorship and RSGB assistance have been vital for this work. The group is very appreciative of the support received from the national Society. It was noted at the ICARE conference that many delegates seemed to be receiving little support for their efforts from the parent Society.

Shortly after the letter from ICARE, I received a letter from Bill Little VK3TAJ, to tell me of the activities at Mt Beauty Secondary College, which has had an amateur radio group for several years. There have been up to four licensed staff members at times. An active group of students over several years has worked HF, VHF/UHF, packet and satellite, and has brought amateur radio into a number of areas of the curriculum as well as gaining individual licences. Keep up the good work, Bill!

As I have said before, there must be many amateurs out there who have been involved with amateur radio in schools. Please share your ideas and initiatives, or your problems. I will be happy to co-ordinate any information received, in the hope of encouraging others to venture into the field. I have some information on the SSTV project which I can pass on.

Australian schools are territory which has not yet been very widely exploited as a source of recruits. We need all the new amateurs we can get.

*PO Box 445, Blackburn VIC 3130
ar

FTAC Notes

John Martin VK3KWA, Chairman, Federal Technical Advisory Committee*

80 and 40 Metres - Digital Modes

I have received one reply so far to the note in the October issue of *Amateur Radio* regarding the digital mode segments in these bands. The suggestion is that we should stick to the band plan digital segment of 3620 - 3640 kHz, especially as the same segment is used in other countries such as New Zealand.

A further suggestion is that all RTTY groups should support the band plan and help to avoid clashes by operating within this segment. I would strongly agree with this. It seems strange to ask SSB operators to keep 3620 - 3640 kHz clear for digital modes when, at the same time, we have RTTY activity in the low end of the SSB segment. With regard to 40 metres, the suggestion is that we cannot ignore the significant amount of activity using RTTY, AMTOR, etc in the 7040 - 7050 kHz segment. Therefore, there are strong grounds for expanding our digital segment to 7030 - 7050 kHz.

I would appreciate any further comments so that the proposal can be finalised.

Beacon and Repeater Licence Conditions

The WIA has responded to the SMA's draft licence conditions for beacons and repeaters, and it is hoped that the new licence conditions will be finalised and gazetted in the near future.

Band Plans

I would suggest a close look at the band plans section in the new Call Book. It has been rewritten and incorporates the changes made and described in this column in recent months. Copies of the band plans are also available from WIA offices.

The Australian Amateur Band Plans are also being published in instalments in *Radio and Communications*.

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Why the Members Are At The Top

The "map" of the relationships between the WIA Divisions and Federal, published on page 5 of the October 1995 issue of *Amateur Radio* and page 21 of the 1995 *Call Book*, shows Divisional members at the top. There is a clear reason for this.

The WIA Divisions, and through them the WIA Federal company, are member driven organisations. That is, they exist and operate because of the mutual interests of the people who belong to the Divisions.

Conventional organisation charts typically apply to companies or government authorities, and show lines of command, from top to bottom, and responsibility, from bottom to top. "The boss", the managing director or chief executive officer, is shown at the top of the organisation chart because it is that person who has ultimate control of a company's or authority's direction and operation and ultimate responsibility for its performance.

Likewise, with the WIA Divisions and WIA Federal, it is the members who, in the end, decide what serves their mutual interest. Hence, the members are at the top of the map. The WIA Divisions and WIA Federal exist and continue to function because of the members.

Further News from the World Radio Conference

Decisions made at the World Radio Conference, WRC-95, held in Geneva last October-November, will see the introduction in a few years of new personal communications services (PCS) employing mobile satellite systems (MSS).

Large numbers, referred to as "constellations", of "big LEO" (Low Earth Orbit) and "little LEO" satellites are planned to offer mobile voice and data telecommunications services on a global basis, with services able to connect people anywhere on the planet, regardless of their location and of the local telecommunications standards, according to the International Telecommunications Union (ITU).

A system devised by multinational communications giant, Motorola, called "Iridium", plans to use 66 satellites in continuous orbit at a low altitude, so that one or more satellite is always within

view of a user on the ground. Several other companies have planned and are working on similar systems.

The LEO satellite systems were introduced at the 1992 World Administrative Radio Conference, held in Spain. The Little LEOs were allocated spectrum below 1 GHz (one block covering from 148 MHz, above the 2 m amateur band), while the Big LEOs were allocated spectrum above 2 GHz, which could be used from 1 January 2005.

The ITU said there is intense commercial interest in the new PCS satellite systems. Some 250 satellite systems have already been filed with the ITU, and operators are anxious to get the go-ahead to offer their services to consumers.

The spectrum allocations required by these services were "vigorously debated", the ITU said. Countries from the Middle East, Latin America and Africa were concerned about sharing existing terrestrial services with mobile satellite service allocations. The Conference agreed to arrangements for protecting existing terrestrial services so that they can be phased out slowly and replaced with newer technology.

The Conference allocated additional spectrum below 1 GHz for Little LEO mobile satellite systems, which will be used to provide "mobile data" type services, while the date for entry into operation of the Big LEO systems using the 2 GHz band was brought forward to 1 January 2000. The ITU said there was considerable lobbying on the latter issue, as operators are eager and ready to develop the new market quickly.

The complex mobile satellite systems issues were handled by a Conference committee chaired by Garth Jenkinson from the Australian delegation.

One satellite issue which saw strong interest at the Conference was an application by the Teledesic Corporation which sought a spectrum allocation in order to fix its plans to operate a fixed satellite service of 840 non-geostationary satellites.

Teledesic plans to operate a low-cost global broadband data communications system, which has been dubbed a "fibre in the sky" service. Teledesic was formed by software giant, Microsoft, and US mobile phone company, McCaw Cellular (which is part-owned by the

telecommunications multinational, AT&T). The issues raised by the Teledesic system were dealt with separately from the main Big LEO issues, said the ITU, the Conference allocating the system 400 MHz of spectrum in the 19 GHz and 29 GHz bands.

An ITU conference in 1989 saw the need for simplification of the Radio Regulations, which constitute an international treaty on the use of radiocommunications. A Volunteer Group of Experts has studied the issues since then, their work resulting in a report which formed the basis of discussions at WRC-95.

Changes to the Regulations agreed at the Conference recognised technological developments and global political changes, and the need to improve the Regulation's efficiency. The matter will be reviewed again at WRC-97.

A draft agenda for the next Conference includes the planning of Broadcast Satellite Systems, and the scope of international broadcast rights, both of which are controversial issues, said the ITU.

WRC-95 was attended by 1223 delegates from 140 of the ITU's 184 member countries, as well as 78 representatives and observers from international and regional organisations. The WIA's delegate on the Australian team at WRC-95 was David Wardlaw VK3ADW.

Cable and Pay TV Standards to be Investigated

Standards Australia is in the process of establishing a project to develop standards for cable television distribution systems, to provide cable TV network design and installation engineers with limits for unwanted radio frequency (RF) emissions (and methods of measurement), and to afford protection to other RF equipment in the local environment.

One of Standards Australia's committees is to undertake the project, Committee TE/3 which covers Electromagnetic Interference matters. TE/3's project manager, Terry Ehret, expects the project to get under way this year, following completion of the formal approval process and clearance from the Board of Standards Australia. Mr

Elhert could not advise a target date for the adoption of a standard. The project will principally be concerned with emissions from cable distribution systems.

Cables for distribution of pay TV and other services are currently being laid around Australia by Telstra and Optus. Telstra's network was on-target to pass more than one million homes by the end of 1995. Telstra's cables are largely laid underground, but Optus has gone for above-ground cabling, using curbside electricity poles. Both networks are designed to reach four million homes when completed, scheduled for late 1999. Foxtel began supplying cable pay TV services last October.

The Australian Broadcasting Authority is concerned that cable TV services using channels in the broadcasting service bands may have the potential to interfere with free-to-air TV, and cable services using channels between 230 MHz and 520 MHz may potentially interfere with mobile or fixed radiocommunications services and navigation equipment which operate in that frequency range. They also expressed concern with the possibility of re-radiation of cable transmissions via indirect connections to external TV reception antennas connected to a customer's TV system.

Standards Australia's Committee RC/5 is considering standards for connection between pay TV service providers' "in-premises delivery systems" and their set-top units (STUs - pay TV receiver and decoder) and their connection to customers' TV receivers. Committee RC/5 is also considering channel plan standards for cable systems and output channels for pay TV STUs and VCRs.

The cable system sends signals to customers in the 85-550 MHz band. Analogue PAL TV signals require a 7 MHz bandwidth, as for broadcast TV, so a large number of channels can be accommodated. It is planned to replace analogue TV delivery with a digital system within a few years. The cable equipment being installed will handle both systems as the digital system will employ FM mode RF signals.

Microwave distribution pay TV has been operating for just over 12 months, with Galaxy being the principal operator.

MICROWAVE PAY TV SET TOP UNITS' OPERATING FREQUENCIES

Channel	STU Output Video Carrier (MHz)	STU Output Band (MHz)
Prom	140.25	139-146
Premier Sports	147.25	146-153
Showtime	154.25	153-160
Encore	352.25	351-358
ANBC	359.25	358-365
BBC World	373.25	372-379
TV1	380.25	379-386
World Movies	394.25	393-400
Music	401.25	400-407
Documentary	408.25	407-414
Arena	415.25	414-421
New World Narrow	422.25	421-428
Nickelodeon	429.25	428-435
Telitalia Narrow	436.25	435-442
Single channel output	57.25	56-63*

* B/cast TV ch. 1

Table 2 Microwave Pay TV Set Top Units' Operating Frequencies.

The RC/5 committee is understood to be looking into standards for here, too, covering the STUs, channel plans and installations. Telecommunications regulator, AUSTEL, is also considering standards for STUs and their installation.

The accompanying table shows the output channel plan of an actual Galaxy customer installation, with a *Jerrold* STU (by General Instruments). A single channel output, using TV Ch 1, can be taken to the TV set, and the STU operated using its remote control. Alternatively, another RF output sends each pay TV channel to an individual output channel, which can be selected using the TV or a VCR's channel selector. The STU to TV/VCR link is via coax from a screw-type F-connector.

Note from the table that the two lowest frequency channels span the 2 m band, and the four higher frequency channels cover the bottom of the 70 cm band.

For amateurs, there may be potential for electromagnetic interference (EMI) from, and RF interference (RFI) to, cable and microwave pay TV STUs. This will be dependent on standards of STU

manufacture and installation. While concerns have been aired over cable EMI and RFI, the equipment and installation has to be watertight as well as "RF tight", as the carriers (Telstra and Optus) have to meet regulations with regard to reliability and delivery of services, or face government sanctions.

There is more potential for EMI and RFI problems from the street-to-premises link, and the STU installations. However, suppliers are providing equipment (cable transmission equipment as well as customer equipment) designed and manufactured to meet European and North American market requirements, where fairly stringent electromagnetic compatibility standards have been mandatory for some time, and have in recent years been strengthened.

It is anticipated that Australian standards will likely be modelled after recent European standards.

The WIA is represented on Standards Australia's electro-magnetic interference Committee, TE/3, by David Wardlaw VK3ADW.

How's DX

Stephen Pall VK2PS*

At the beginning of the year one looks ahead and tries to foresee what the future might bring.

We certainly will see improved propagation on the bands and, with a bit of luck, we will reach the bottom of the present solar cycle by the middle or the end of this year. At present, propagation is lingering with its usual ups and downs near the bottom. Unsettled and active conditions are monthly regulars as the result of a recurring coronal hole activity. Try to make the most of the present low-band activity on 80 and 160 metres, conditions will change in the future.

New DXCC countries? Tung Sha Dao (Pratas) has been accepted, Hung Yan Dao (Scarborough) is on the threshold of being accepted, the independent Palestine (formerly ZC6) will become a new DXCC country once the political settlement process is completed, and there is a slim chance that we will see a reorganisation of the call signs in the future Bosnia-Herzegovina. I think the DXCC Awards Committee will take a serious look at themselves and I can see some internal changes and new decisions to strengthen the prestige of the DXCC Award which has suffered a few light dents lately.

A few deletions from the present DXCC countries list is also a possibility, among them the fate of Mt Athos being a separate country. If there is no activity from the only resident amateur, and there is no "access" to outside amateurs, what is the purpose of having a separate country on the books?

In the meantime, let's enjoy the hobby, which some of us treat as a full time profession. Let's try, even if it is difficult, to live in peace with each other on the bands.

Pratas Island - BV9P and Scarborough Reef - BS7H

The controversy of the acceptance or non-acceptance of these two activities as separate DXCC countries has reached its final stage. The ARRL DX Advisory Committee, in a press release dated 22 December 1995, announced that the DXAC has voted 12 to 4, and the Awards Committee has voted unanimously, to add Pratas Island BV9P, for contacts made 1 January 1994 and after, to the DXCC Countries list. This decision is based on DXCC Rules Section II 2(a) (separation by water). Pratas Island, located in the South China Sea, is administered by Taiwan.

QSL cards will be received by the DXCC Desk commencing 1 April 1996. Cards received before that date will be returned without action. Because of QSLing

irregularities, it will be necessary for anyone who has a picture card from the January or March 1994 operation to obtain a replacement from QSL manager KU9C (the picture cards are not acceptable for DXCC credit).

The QSL Manager, Steven M Wheatley KU9C, POB 5953, Parsippany, NJ 07054, said, on 25 December, "The QSL card artwork is about to go to the printer. It has provision in the artwork to 'work' with any of the three BV9P operations, and approximately 20,000 cards are due to be printed. I have the March 1994 and May/June 1995 operational logs. I should have the first operation logs soon".

The ARRL Membership Services Committee (MSC) reported in a press release dated 19 December 1995 that the committee has reviewed the documentation from the DXAC and Awards Committee, and has voted five to two in favour of recommending the addition of Scarborough Reef to the DXCC countries list. This recommendation will be considered at the ARRL Board of Directors meeting on the 19/20 January. In my personal opinion, and taking the Pratas decision into account, Scarborough Reef will get the green light. Watch this space.

Macquarie Island - VK0WH

Not since the DXpeditions to Bouvet and Peter I Island, was there such a bedlam on the bands as on 10 December, when Warren, VK0WH showed up on the 20 metre band.

The "big guns" from Japan were there in full force, as were the northern Europeans.

Warren must have felt lost and wondered what all the fuss was about? He admitted on the air that his last DX experience was back in 1980, some fifteen years ago when he was on the other side of the dog-pile.

As reported earlier, Warren left his home state Queensland at short notice to join the 1996 ANARE team on Macquarie Island. This left him with little time to organise his future amateur activities on the island. He has given his home call as VK4WH, indicated that cards should be sent there, and he will reply to them after he finishes his tour of duty.

He has no personal radio equipment with him, and he is using the ANARE old-styled equipment where he is restricted to the use of only three frequencies, which have to be pre-programmed at the transmitter site, a one kilometre walk from his shack. The equipment uses synthesised tuning instead of VFOs, therefore making split operation difficult.

Originally, Warren did not intend to be very active on the bands, as he is very busy with work commitments. He is responsible for the upkeep of the telecommunication equipment on the island. A round trip to the southern end of the island takes a full week. The world wide DX fraternity must understand that he is not on a DXpedition, he is not a red-blooded "mad" DXer, he has limited time for the hobby as demands of work with irregular working hours comes first, and he cannot oblige with requests on different bands and modes.

His antennas are those of the ANARE station, consisting mainly of V-beams directed to the north. Warren is an old style DXer. He wants proper reports, names and QTH which slows down the QSO rate. His contacts are QSO contacts, not the contest type "59" report. His CW is of moderate



Is this the QSL you have been waiting for?

speed which will improve as time goes by. He has already worked a number of stations in VK, ZL, JA, USA and Europe. Unless you have a directional beam, your chances to work him from VK/ZL and to break the "Northern Air Invasion" which very often uses excessive power, are negligible.

Warren operated originally on 14130 and 3570 kHz SSB and 7010 kHz CW. These frequencies have been changed around after he nominated Jim Smith VK9NS as his QSL Manager. Warren now operates on 7010 and 14040 CW, and on 14260 kHz on SSB, for one or two hours starting around 0930/1000 UTC. He sends his logs by fax at the end of the month to Jim, who has already made arrangements for the printing of QSL cards.

It is expected that Jim will start QSLing by the end of January. Jim requires a SAE and return postage. Please note that Australian stamps are not valid on Norfolk Island, they have their own. For return postage, send either Norfolk Island stamps or one IRC or one "green stamp". Jim prefers a separate envelope for the Macquarie Island activity. Send your card to Jim B Smith VK9NS, PO Box 90, Norfolk Island, NSW 2899, Australia.

Callsigns of the Past

In the past there has been a great number of amateur radio operators on Macquarie Island. This was the time when shortwave radio was the link between the island and mainland Australia. Since the improved satellite technology has advanced to the present stage, short wave radio has lost its significance. It is no longer essential to have a full time radio operator at hand, who very often also had an amateur operator's licence and callsign.

It was an entirely different world in the 60s, 70s and 80s. Ken Matchett VK3TL, the curator of the WIA National QSL collection, was kind enough, at my request, to prepare a list of callsigns which were active from Macquarie Island in the past. The list is a long one and probably boring to some of our readers. However, it is published here in full for historical reasons, as I believe this is the first and most extensive list of amateur operators on Macquarie Island going back to the birth of ANARE (Australian National Antarctic Research Expeditions) in the year 1948. The callsigns are in the order of year of activity, callsign, and operator's name and home call if known. One must remember that, until the late 1950s, the Australian Antarctic had the VK1 prefix allocation.

1948, VK1AA (Ted McCarthy); 1949, VK1ADS (Ron W Sterrett VK3ADS); 1949/1950, VK1JT (John Totten); 1949/50, VK1RD (Brian Robertson VK5RD); 1950, VK1RF (Indecipherable RGF?); 1950/51,

AUSTRALIA

Northern Territory

IOTA OC: 141

Zone: 29

TO:

FROM: VK8NSB/P

OPERATOR: Stuart

QTH: GROOTE EYLANDT

CONFIRMING RECENT QSO

CALLSIGN	DAY	Month	Year	TIME(utc)	MHz	Mode	R	S	T

☐ PLEASE QSL
 ☐ VIA BUREAU / DIRECT
 ☐ THANKS QSL
 ☐ 73's Best DX
 HOPE TO CUAGN

It seems Stuart did not give up amateur radio (see *How's DX*, August 1995).

VK1RB (Trevor Boyd); 1951, VK1SW (Jim Wyatt); 1951/52, VK1BS (W J Storer); 1951/52, VK1WO (Hugh Oldham); 1952, VK1AE (Eric L Macklin); 1952, VK1RR (Roy Amel VK1RR); 1952/53, VK1RG (Rob S Gurr VK5RG); 1953, VK1RL (Russel Fraser); 1953, VK1BA (Brian? Fiebig); 1953, VK1AF (Scott); 1953/54, VK1AC (Alan "Chas" Hawker VK3JB); 1954, VK1DJ (David H Johns VK7DJ); 1954, VK1GA (Gordon Abbs); 1955, VK1XM (Bernie E Shaw); 1955/56, VK1IJ (Doug Twigg); 1956, VK1DA (Alex Brown); 1957, VK0CJ ("Alan"); 1958, VK0KT (George Heindricks); 1958, VK0TC (Tom Cordwell); 1959, VK0CC (Clive J Cooke VK4CC SK); 1960, VK0IT (Alf Kissick?); 1960, VK0WH (Harold L Wright ex-VK2AWH SK); 1961, VK0FX (Fred M Stean); 1964/65, VK0TO (Trevor Ologro VK2TO); 1966, VK0MI (Col Lebbon); 1966/67, VK0CR (Rodney Champness VK3UG); 1967/68, VK0IA (David James); 1968/9, VK0KJ (Greg Johnston VK7KJ); 1969, VK0KW (Karl Warchot OZ9KP); 1969/70, AX0KW (Karl Warchot OZ9KP); 1970, AX0LD (Harold Brown); 1971, VK0TM (Fred Iliff); 1971/72, VK0RC ("Chris"); 1972/73, VK0WW (Ronald W Worden); 1974, VK0DM (Dave Meldrum); 1977 & 1980, VK0KH (Ken Hanson); 1977, VK0AC (Art Collidge); 1978/79, VK0JC (Joergen Christensen OZ8AE); 1978, VK1PA/P (Peter Arriens); 1979, VK0PK (Peter W King); 1980, VK0DB ("David"); 1980, VK0KH (Ken Hanson); 1981/82, VK0AN (Alan Nutleg VK2BNA); 1982, VK0AP (Peter McLennan); 1983, 1984, 1985, 1987, 1989, VK0GC (Graeme J Currie); 1984, VK0CK (David J Rasch VK5CK); 1985, VK0YL (Denise Allen); 1986, VK0SJ (Sjoerd "Sojo" Jongsens); 1986, VK0NE (Graeme McDiarmid VK3NE); 1986, VK0ML (Mark Loveridge);

1987, VK0DS (Doug Speedy); 1987, VK0ML (Mark Loveridge); 1988/89, VK0AE (Robyn Downey [YL]); 1988, AX0NE (Graeme McDiarmid VK3NE); 1989, VK9YQS/O (Doug Speedy); 1991, VK0ML (Mark Loveridge).

Crozet Island - FT5W & Kerguelen Island - FT5X

Samuel F5JUT and Jean Jacques F5SZK arrived at Possession Island (46° S 51° E), Crozet Archipelago) on 14 December and will sign FT5WE and FT5WF. They hope to have two stations active for 12 months. Activity will be on CW and SSB but they intend to operate also on RTTY, SSTV and packet radio. Suggested frequencies are CW: 3505, 7005, 10105, 10115, 14005, 18075, 21005, 24890 and 28005 kHz; and on SSB: 3792, 7045, 14145, 14245, 18145, 21245, 24934 and 28445 kHz.

A beacon will transmit on six metres with the callsign FT5WE. QSL to FT5WE via F5GTW, Touyeras Claude, 23 Rue des Chardonnaies, Cite de la Diete, 86130, Jaunay Clan, France. QSL to FT5WF via F5IZK, Loiseau Andre, Ecole de Garrabet, 09400 Garrabet, France.

On Kerguelen Island, Jean Jacques FB1LYF (ex J28CW) was reported signing FT5XK; QSL to F5NZO. Look for him on 14136 kHz around 1600 UTC.

Higher ARRL DXCC Fees

Times are changing. The "free" or "moderate cost lunch" is no more. The ARRL have published a new schedule of fees to take effect from 1 January 1966. The reason is to break-even the cost associated with granting and processing of the awards.

First ever DXCC award will now cost \$US10 (including pin); and additional

awards \$US5 (including pin). The first DXCC application by a foreign non-ARRL member will now cost \$US10 for the first 120 credits (previously no limit). Additional for a foreign non-ARRL member is \$US20 for first 100 QSO credits (new), and additional QSOs will cost 10 cents per QSO (new).

In the past the DXCC desk has been overwhelmed from time to time with the number of new applications or endorsements requests. Dare we say that, in view of the above changes, the rate of DXCC applications by foreign amateurs will dramatically decrease in the future.

Future DX Activity

- Peter PB0ALB will be active from Sarawak, East Malaysia from 20 February to 2 April with a special suffix in the 9M8 block. QSL to home call.
- Roman 4K2OT is active from the Ukrainian Antarctic Base Vernadsky. This is located near the British Antarctic Base Faraday on Argentine Islands (AN-006). With his own call EM1EA, and with the EM1U base call. QSL to 9H3UP Roy Rogers, PO Box 113, CMR, Valetta, Malta.
- The DS1BMJ station is active from the multinational Antarctic Base at Patriot Hills located on Ellsworth Island.
- Two Argentinian stations are active from the Antarctic. LU1ZB is located at the Argentinian Antarctic Navy Base Melchior on Anvers Island (AN-012). LU6Z is active from the Argentinian Antarctic Navy Base Orcadas on Laurie Island, in the South Orkney Island group (AN-008). QSL via LU6EF.
- The LZ0A station is active from the Bulgarian Antarctic Base Hemus, located on Livingston Island in the South Shetland Group (AN-010). QSL via LZ1KDP.
- The ZX0ECF station is active from Brazilian Antarctic Base Commandante Ferraz located on King George Island in the South Shetland Islands (AN-010).
- Bernhard DL2GAC is on the "Pacific Road" again. In January he was active as VU2BMS from southern India. In February he will be in the Solomon Islands. If he can find suitable transport he wants to be active from Stewart Island, operating mainly on 40 and 80 metres. He intends to take part in the "CQ" SSB contest at the end of February as H44MS on 160 metres. In March-April he will be in Vanuatu.
- Oleg UT9XL is active from Kabul, Afghanistan as YA9XL. His QSL manager is Yan F5TCN whose correct address (not the one listed in the 1996 callbook) is Yannick Chillaux, 14 Route D'Harnes, F-62880, Annan sous Lens, France.

- Theo PA3CBH (ex-YN1TV) is in Mozambique and operates under the C91BT call.
- VP8CRE is active from Faraday Base on Argentine Island (AN-006).
- VP8CQR is active from British Antarctic Base on Deception Island in South Shetland Group (AN-010). QSL to Cristoff, PO Box 35, 80/325 Gdansk 37, Poland.
- Art N7A and Mike NG7S will be active as V31JZ and V31RL from Turneffe Island (NA-123) from 9 to 14 February. QSL to home calls.
- EC4AAC, the US base station on Palmer Island, Antarctica is active during Thursdays around 0300 UTC. QSL to KESAS.

Interesting QSOs and QSL Information

(E) = East coast, (W) = West coast, (N) = North, (M) = the rest of Australia.

- 9Y4GR - Greg - 21133 - CW - 1034 - Nov (N). QSL to Gregory Redon, 8 Henry Pierre St, Saint James, Port of Spain, Trinidad (one IRC for return postage).
- FR5DD - Jean - 21135 - CW - 1026 - Nov (N). QSL to Jean Pierrat, 8 Ave des Badamiers, Les Filas, F-97434, Saint Gilles les Bains Reunion, France (one "green stamp" for return postage).
- Z24JS - George - 21295 - CW - 1048 - Nov (N). QSL to W3HNN, Joe Arcure Jr, PO Box 73, Edgemont, PA 19028, USA (one "green stamp" for return postage).
- LZ2RS - Rumi - 28135 - CW - 1014 - Nov (N). QSL via the QSL Bureau.
- C21TT - Tony - 21280 - SSB - 1159 - Nov (N). QSL to PO Box 372, Republic of Nauru.
- 3A2MD - Laura - 14224 - SSB - 1303 - Nov (E). QSL to PO Box 2, Monte Carlo, 98001, Monaco.
- ZP5MAL - Juan - 14185 - SSB - 0944 - Nov (E). QSL to Juan F Duarte Burro, PO Box 34, Asuncion, Paraguay.
- A71DX - Saad - 14250 - SSB - 1255 - Nov (E). QSL to PO Box 6372, Doha, Qatar.
- A45ZN/25 Tony - 14255 - SSB - 1232 - Dec (E). QSL to Box 981, Muscat 113, Oman.
- A92FZ - Bob - 14255 - SSB - 1242 - Dec (E). QSL to PO Box 15763, Adliya, Bahrain.
- E21CJN - Tham - 14226 - SSB - 1311 - Nov (E). QSL via PO Box 25, Klongtoey, Bangkok, Thailand 10110.
- S01RSF - Mulai - 14255 - SSB - 1205 - Dec (E). QSL to EA4RSF via the "EA" QSL Bureau.

From Here and There and Everywhere

- If you worked Bill KH4/NH6D on Midway, send your card to his home call. Bill says,

in two to three years time, Midway will be open for commercial enterprise activities. At present, access is restricted to military personnel.

- Frank YJ0AA reports that ZY0PT, allegedly on St Peter & Paul Rocks, is a pirate. Frank also reports that the Vanuatu (YJ) QSL Bureau is active again and he is the QSL Manager. Bureau cards should be sent to Frank Palmer, PO Box 6, Vila, Vanuatu, South Pacific.
- According to VK6VS, DK1RV, the QSL Manager for ZK1DI, advises that, due to the high postal charges in Germany and the low value of the "green stamp", he needs three green stamps or two IRCs for an airmail reply, or one IRC for surface mail.
- ZL VU2DK suggests using strong well-closed envelopes, so that contents will not be seen from the outside, when QSLing direct with Indian stations. Also, do not write any call sign anywhere or make any reference to amateur radio. The local postal situation in India is very bad.
- ZR1DCE/ZS8 is a new beacon located on Marion Island and is active on 50.200 MHz.
- Most of the 3A prefixes like 3A2CC, 3A50A, 3A50DX, 3A0DX, 3A0X, which appeared on the bands during October were all pirates, as are all 3A0 prefixes.
- The XZ1A activity during the month of October produced approximately 15,000 QSOs of which about 4000 were with the US. The other station, XY1HT, made approximately 11,000 contacts.
- The Republic of Austria will celebrate its millennium, the 1000th year of its foundation, by authorising a special call sign prefix for Austrian amateurs in 1996. Austrian amateurs, if they so wish, can use the OEM prefix for the entire year. The Austrian Radio Amateur Society (ÖVSV) will sponsor two special awards. See details in the "Awards" column of *Amateur Radio*, November 1995 issue.
- If you are concerned about sending "green stamps" with your direct QSL request to Russia, it is suggested that you write UEHOCETW HET on the envelope which, in Russian, means "no value". (Well, sort of! Perhaps best check with a good Russian grammar. Ed)
- On 15/16 December the Port Adelaide Radio Club VK5APC activated the special call V15SUB to celebrate the launching of the second "Collins" Class submarine, HMAS Farncombe. To receive a special QSL card, send your card to PARC, PO Box 352, Port Adelaide, SA 5011.
- Marion Island ZS8 will probably be re-activated in March 1996 by an amateur

scientist, commencing work at the research station.

- Pirates galore. Jim W6YA is not the QSL manager for AP6YA, who is a pirate. A new pirate is active on 80 metres and other bands using the call signs OA4EEI, DL4EEI, PY2EEI and G3PPE.
- 9K2UA Mohammad is a new amateur in Kuwait and is not yet listed in the callbook. QSL via the Bureau.
- The operator of XU2UN was SP1MVE, and that of XU3UN was SP5ABL.
- Stuart had a very successful activity on Groote Eylandt (OC-141). QSL via VK8HA.
- Phil VK0FPS was heard in December from the Australian Antarctic Base at Casey.
- Franz 3W6GM is operating on a fixed frequency of 14198 kHz SSB from Saigon. QSL to DF5GF.
- If you are still waiting on your 1992 Aves Island DXpedition card (YX0AI), try re-QLing to WS4E Scott M Cronin, 1909 N 41st Ave, Hollywood Hills, FL 33021, USA. Scott only collects the cards; they are then hand carried to Venezuela

where they are verified and mailed. Those who have enclosed a US SASE are then hand carried to the USA and posted there. IRCs are welcomed.

Similarly, if you are still waiting on cards from the YV0RCV Aves Island 1994 DX Activity, please re-QSL to Reinaldo Leandro, M207, PO Box 020010, Miami, FL-33102, USA, who seems to be able to obtain the QSL card for you. Best of luck.

• It has been reported, but officially not confirmed yet, that Romeo UB5JRR has become "persona non grata" at the ARRL DXCC desk, which means that any further activity by him will not count for DXCC. This alleged decision can be linked to his past P5RS7 and XY0RR activities. All currently credited operations will remain valid but Romeo will not be allowed to participate in the future in the DXCC program.

• Syd VK2SG, the co-founder of the Australian National Amateur Radio Teleprinter Society (ANARTS) in the 1970s, became a Silent Key due to a heart attack on 29 December 1995 at the age of 76. Syd and Bill VK2EG started

the weekly RTTY DX Notes which were renamed the VK2SG RTTY DX Notes in 1993, when Syd had to relinquish his contributing efforts to others. Syd was the first to receive the RTTY DXCC in Australia. Vale Syd, a great DXer who left his mark on the RTTY DX scene.

- If you wondered, there is no further news of the postponed Heard Island DXpedition.

QSLs Received

TT8BP (4 w IK5JAN); 9L1PG (3 w NW8F); ZC6B (4 w K9JJR); 9N/G3XWW (4 w op); 3W6GM (5 w DF5GF); C53HG (2 w W3HCW).

Thankyou

Many thanks to my friends and supporters who supply me with news and information. Special thanks to VK2XH, VK2KFU, VK2TFJ, VK3TL, VK4AAR, VK5WO, VK6VS, VK8NSB, VK9NS, OH0XX as well as the publications *QRZ DX*, *The DX Bulletin*, *The DX News Sheet*, *INDEXA*, *425 DX News*, and *Golist QSL Managers List*.

*PO Box 93, Dural NSW 2158

ar

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Spotlight on SWLing

Robin L. Harwood VK7RH*

Well, a New Year has arrived and already there have been some cut-backs and deletions to the shortwave scene, even as I am compiling this on New Year's Day.

The British Government budget, which was brought down in Parliament at Westminster, announced some large cuts to the annual allocation doled out to the BBC World Service. Programming will be affected and already one popular language service has been discontinued. The French Service, which commenced in 1938 and played a vital role during the Second World War to the Underground Resistance, ceased as at midnight on 31 December 1995. Other services and programming are likely to be affected in the days ahead.

It was also recently announced that Canada was axing its shortwave service as of 31 March. Apparently the Government and the Canadian Broadcasting Corporation, who operates the Service, could not agree who was responsible for its budget. There was a predictable outcry from many SWLs and Canadians abroad and conciliatory noises were made. However, no definite reprieve for Radio Canada International has been granted yet.

The future direction of the VOA and Radio Free Europe is also unclear in view of the continuing saga between the President and the US Congress over the Federal Budget. The RFE/Liberty operation is now based in Prague, although the senders are based in Germany, Portugal and Spain and now also from VOA sites in the USA. As I have frequently mentioned, programming from both the VOA and RFE/RL is being carried over domestic AM and FM networks in the target countries. RFE/RL's future does look questionable with the emergence of strong viable independent broadcasting structures in the former Warsaw Pact nations.

For instance, Polish was recently axed altogether after paying a significant role in Poland's emergence from Soviet dominance. As well, Russian language programming over RL has also been reduced and replaced with VOA Russian programming. It is a far cry from 10 years ago, when RFE/RL signals were everywhere because you could easily hear the multiplicity of white noise jammers blocking the frequencies.

However, there is some good news that English language programming will be re-introduced over Radio Denmark. A monthly 15 minute broadcast will be aired on the first Saturday of the month at 10 minutes into their daily 30 minute program. The broadcasts will be on 3 February, 2 March and 6 April and the best time for this region is at 0940 UTC. Radio Denmark broadcasts over the senders of Radio Norway and their programs are tacked on to the end of the regular Radio Norway output. Frequencies are 15175 and 15230 kHz.

Incidentally, Oslo also broadcasts in English for 10 minutes every Sunday, on 7185 kHz between 0700 and 0800 UTC. Listeners in WA could try 15605 between 1300 and 1400 UTC.

Recently my brother-in-law became engaged to a Vietnamese-Australian and naturally a query came for frequencies in that language. This was easy as the Voice of Vietnam is easily heard on an unusual channel of 10059 kHz in our evening hours. It is also heard on 9732 kHz variable but is shared with their foreign service output. English programming is on 9840 kHz at 1000 UTC but the modulation is down, yet it does help that one of the announcers is Australian.

Well that is all for this month. Please note that I no longer have a fidonet address. All the best in monitoring.

*S2 Connaught Crescent, West Launceston TAS 7250
VK7RH VK7BBS LYN TAS AUS OC
Internet: robboy@tamacom.com.au
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**Have you advised the WIA Federal
Office of your new callsign?
Use the form on the reverse of the
Amateur Radio address flysheet.**

International Amateur Radio Union Monitoring Service (IARUMS) – Intruder Watch

Gordon Loveday VK4KAL*

The IARU Monitoring System – Part 2

Part 1 of this continuing series was presented in last month's column.

1. Policy Statement

a. No person shall, without the prior approval of the IARU (International Amateur Radio Union) Administrative Council in writing, communicate in the name of the IARU, with the ITU (International Telecommunications Union), IFRB (International Frequency Registration Board) or any administration or radio operating agency.

b. The Administrative Council (AC) shall be the sole deciding authority with regard to any requests from regional organisations, national societies, or individuals, for a case or cases of a breach of the Convention or infringement of the Regulations to be referred to the IFRB.

2. Objects of the Monitoring System

- To collect data on the use of the amateur bands.
- To compile a record of instances of "harmful interference" for further action.
- To take steps to eliminate "harmful interference".
- To encourage monitoring activity by national societies.
- To have Monitoring stations, that meet the technical standards recommended by the CCIR, available on a regional basis.

3. Participation in the IARUMS

Any national society that is a member of the IARU may participate in the work of the IARUMS and may send monitoring reports to the appropriate Regional Co-ordinator.

Any individual in those countries where there is NO IARU member society, may send monitoring reports to the Regional Monitoring Service Co-ordinator.

4. The ITU Radio Regulations

Every national society and each Regional co-ordinator shall have access to a copy of the ITU Radio Regulations. They should be read in conjunction with the ITU Convention. These publications are available from ITU Geneva or National Administrations. Not every country in the world is a signatory to the Final Protocol of

the ITU Convention or to other ITU Documents (in Australia, the SMA (Spectrum Management Agency) has a list of these countries).

5. Harmful Interference

It is obvious from even a casual reading of the radio regulations that complaints about non-amateur stations in amateur bands MUST be supported by evidence of "harmful interference".

NOTE: Any station may operate in an amateur band under the provisions of paragraph 342 of the Radio Regulations, PROVIDING it does NOT cause "harmful interference" to amateur stations. It must be NOTED that the definition of *harmful interference* in the Convention is different to the definition given in the Radio Regulations (I can supply a copy if needed).

6. Breaches of the Convention and or Radio Regulations

It is important to realise that the Radio Regulations derive from the Convention. It

must also be noted that, until a signatory Government has ratified the Convention it is not necessarily bound by the provisions of the convention and the regulations.

7. IARUMS International Co-ordinators

Section 2 is about Regional Organisations.

Section 3 is about Regional Co-ordinators – I will cover these if requested.

Section 4 covers National Societies.

IARUMS Results

I have received some good news from the Region 3 Co-ordinator, Rohan ZL1CVK. I quote, "Region 1 monitoring system have reported the successful removal of intruders from several ham bands. These include two from 40 m, four from 20 m, one from 30 m, and 10 from the 17 m band."

I have received an official report that the Adventist World Radio Station operating on 7.100 MHz has been removed as from 13 November 1995. The frequency has been clear since.

Also, as a rider to this, discussions are now taking place with the object of putting into operation a system for monitoring international amateur satellite transmissions. The system will possibly be run by the satellite fraternity.

*Federal Intruder Watch Co-ordinator, Freepost No 4
Rusbyvale QLD 4702 or VK4KAL @VK4KAL-1

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Technical Correspondence

All technical correspondence from members will be considered for publication, but should be less than 300 words.

Feeding Verticals

It was suggested in my two articles about verticals (December 1995 and January 1996 issues of Amateur Radio) that a suitable RF choke could be made by winding a few turns of the coaxial feeder cable through a toroid. A current balun was also suggested as doing the job.

Further tests have been done using a Current Probe on a ground plane built just for this purpose and current has been detected on the coax shield with both of these devices installed.

The radials were each a quarter wavelength long and I used four of them for this test. A length of 0.25 and 0.28 of a wavelength was used for the radiating element with the radials in a horizontal position. The feedpoint was 0.2 of a wavelength off the ground.

Not only was RF detected on the feeder cable but RF current was flowing down the

aluminium mast supporting the ground plane, which was insulated at the top and run into the ground at the bottom.

All of the above would have put the ground plane at a disadvantage when comparison tests were done between it (the ground plane was the same when the articles were written) and the ground-mounted vertical.

Conclusion

The ground plane would be a better choice and a lot less work would be required than for a ground-mounted version if one was starting from scratch.

It should also be pointed out that performance will suffer in the ground-mounted case and TVI may be worse.

Adrian Fell VK2DZF

PO Box 344

Baulkham Hills NSW 2153

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Novice Notes

Peter Parker VK1PK*

The WIA Education Service – 34 Years of Helping Amateurs

This month's column is a special look at a service, run by a small group of volunteers, that has assisted thousands to obtain their amateur licence. It will give a brief history of the WIA Education Service and its precursor (the Youth Radio Scheme) and outline how their activities can benefit you.

The Youth Radio Scheme

The Youth Radio Scheme (YRS) came about after a NSW proposal for its formation was accepted as WIA policy at the 1962 Federal Convention. Founded by Rex Black VK2YA, it aimed to encourage young people to become radio amateurs by providing practical instruction in radio and electronics at clubs attached to schools and youth groups; some of these had been operating in the 1930s, but the YRS triggered a renewed interest. By 1967, 48 clubs and groups were operating in NSW alone, and the Scheme had spread to all states.

The YRS was based on a series of syllabuses, examinations, and constructional projects. Those who satisfied the requirements were awarded certificates, several grades of which were available. The standards of the YRS were high. The level demanded of those who achieved the Advanced YRS certificate was more rigorous than the standard of current AOCF theory examinations. The first two levels of certification are still in use by schools today in some states.

Vocational placement was a major feature of the YRS, and many former YRS students pursued careers in electronics. It received support from the Institution of Radio and Electronic Engineers (IREE), and was highly regarded by employers. In many cases, when two otherwise equal applicants applied for a position, it was the YRS certificate holder who gained the job.

Possibly the greatest legacy of the YRS was its support for the introduction of the Novice amateur radio licence. The Federal WIA established the Novice Licence Investigation Committee which recommended that a Novice licence be established in Australia. After much debate, this subsequently became WIA policy, and was agreed to by the Minister for Posts and Telecommunications in 1976.

Some of the original question bank for the Novice licence came directly from YRS publications, published several years previously. It is noteworthy to add that the

style of sending used in the Novice Morse receiving exams is based on that long advocated by the YRS – individual letters and numbers are sent faster and the gaps between them are increased so that they can only be learnt properly as single entities, rather than combinations of separate dits and dahs.

The WIA Education Service

During the time of the CB boom of the 1970s, the YRS was reconstituted to become the WIA Education Service. By publishing and distributing amateur study books and Morse tapes, the Service has assisted thousands of people to gain their amateur licences.

The philosophy of the Service is to

spread radio and electronics knowledge through the provision of study material at the lowest possible cost. A small group of volunteer radio amateurs and teachers produce and distribute books and Morse tapes. During the late 1970s, Dave Wilson, Rex Black, Ken Hargreaves, Derek Lark, Ian Hook, Athol Tilley, Geoff Paves, Tom Scott, Kurt Welzel, Br Cyril Quinlan and others were involved in this work. The material is regularly updated to keep pace with changes to the amateur licence syllabus.

The Service has been responsible for the education of a whole generation of radio amateurs. The material produced was popular, not only amongst aspiring amateurs. It also found ready acceptance amongst High Schools, Scouts, the Armed Services, Technical Colleges, PMG/Telecom as well as private training colleges. Electronics became an accredited examinable subject in NSW

WIA Education Service – Products Available

The following is a list of the material distributed by the WIA Education Service. Some items are also available from Dick Smith Electronics. All prices include postage. The prices shown are reduced for bulk orders. Although based in NSW, the Service caters for people in all states.

* Novice Study Kit: \$28.00

Includes books entitled *Into Electronics*, *Novice Electronics*, *1000 Questions*, *Learning Morse Code Kit* (with three tapes) and the *Novice Supplement Handbook*.

* Novice Limited Study Kit: \$17.00

Includes all items in the Novice Study Kit, except the Morse Tapes.

* Into Electronics: \$5.50

An introductory theory text suitable for club and school classes covering the fundamentals of electricity and how it is used.

* Novice Electronics: \$5.50

An easy to follow text that extends from "Into Electronics" to a complete Novice theory course, covering all syllabus topics.

* 1000 Questions and Answers: \$5.50

A collection of typical exam questions covering all areas of Novice theory and regulations. Rewritten 1994 to reflect recent syllabus changes.

* Novice Supplement: \$4.00

Syllabus, Regulations, study guide and general information about all licence levels.

* 100 Projects: \$5.00

Simple, cheap, well-explained elec-

tronic projects for High Schools and hobbyists, using common components, with an emphasis on learning from each project.

* 500 Questions and Answers: \$5.00

A collection of typical exam questions that bridge the gap between Novice and Full Call Standard.

* Learning Morse Code Pack: \$11.50

Three 60 minute Morse cassettes with 120 programmed steps keyed to a comprehensive text and spoken prompts. Letters, numbers and sentences at 5 wpm for Novice standard Morse.

* Morse Code Cassettes: \$4.00 each

60 minute Morse tapes at any speed from 4 to 30 wpm, three versions of each available. Specify speed when ordering. 5 – 8 and 10 – 12 wpm tapes for an easier learning style are also available.

All orders should be sent to WIA Education Service, PO Box 262, Rydalmere, NSW, 2116.

Those with enquiries should phone the Service on (02) 622 2040. Alternatively, those with e-mail access could send a message to hook@ee.su.oz.au.

high schools due to the influence of the WIA Education Service. The Service ran some 20 holiday camps for students with an interest in electronics. These were very popular, with 40-50 children normally attending.

The Service's assistance to people, regardless of disability or geographic location, makes it unique. It has had a long association with Blind schools, which have been given permission to translate books into Braille. A scheme to allow people in remote localities to sit Novice examinations was established. This allowed hundreds of people to gain their amateur licences for no cost other than postage.

Many school electronics courses continue to be based on the YRS curriculum. At the end of the course, students sit an external examination, set and marked by the Education Service. Certificates are issued to the successful students. Thousands have sat these exams, and they proved very popular with teachers. Schools or youth clubs interested in this program should contact Ian Hook on (02) 639 2109.

Today the Service is run by two volunteers, Ian Hook and Kurt Welzel. It produces a full range of Novice and AOCIP textbooks and Morse tapes (a list of material stocked is shown below). While orders are well down on their peak in the late 1970s/early 1980s, the Education Service fills a definite need, without which amateur radio in Australia would be much the poorer.

Acknowledgment

Thanks to Ian Hook and Kurt Welzel of the WIA Education Service for assisting with the writing of this article, and to Rex Black VK2YA for providing (through personal correspondence) information on the Service's early years.

(The WIA Education Service, as described by Peter VK1PK, has operated, and presumably still operates, under the auspices of the VK2 Division of the WIA, not the Federal body. The Federal WIA appoints an Education Co-ordinator (currently Brenda Edmonds VK3KT). Most Divisions also have Education Officers. Ed)

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VK1PK @ VK1KCM.ACTAUS.OZ

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**Support the
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Over to You – Members' Opinions

All letters from members will be considered for publication, but should be less than 300 words. The WIA accepts no responsibility for opinions expressed by correspondents.

Objection to November Insert – WIA Replies

An insert to all issues of the November 1995 Amateur Radio magazine carried a membership promotion on one side and a WIA statement titled "Activities and Achievements" on the other.

In the January 1996 issue of *Amateur Radio*, page 44, Ian Hunt VK5QX took issue with a statement made under the heading "Cutting the Cost of Licence Fees". The whole of that statement read: "When the SMA in 1994 proposed raising Amateur Licence fees to \$71 from \$36, the WIA publicised the issue widely, through amateur channels and the public media, bringing pressure to bear on the government. In March 1995, WIA representatives put the amateur radio community's views and objections to the government and won a cut in the proposed fee to \$51."

In his letter, Mr Hunt chose to quote only the second sentence of that paragraph, then argued that it was lobbying by individual amateurs "... which played the major role in having proposed licence fees lowered. This was well before the Federal representatives of the WIA had any contact with the government concerning the matter."

The WIA readily acknowledges the role individual amateurs played in conveying their opposition to the proposed fees to members of parliament. However, Mr Hunt has not informed himself of the facts, his own contact with the Federal Parliament notwithstanding. The chronology of WIA action over the licence fees issue shows Mr Hunt's assertion to be in error. In addition to a report in *WIA News*, page 41, February 1995 *Amateur Radio*, that chronology is as follows:

14/12/94: WIA News release on proposed new fees finalised, despatched to Federal Office for insert in January 1995 issue of *Amateur Radio*, sent to Divisions, and released to the packet radio network.

15/12/94: WIA News Release appeared on the packet network, to ALL@VKNET.

16/12/94: First comment on proposed fees appeared on packet radio.

18/12/94: News of proposed fees carried on some Divisional broadcasts. NSW Division suggest amateurs write letters of protest to members of parliament.

29/12/94: WIA, having monitored reactions to news of proposed fees, saw clear evidence of overwhelming

opposition. Draft Media Release on fees issue prepared and finalised.

30/12/94: WIA released Media Release protesting new fees: "New Tax Hits Community Group".

31/12/94: WIA wrote, sending Media Release, to the Minister for Communications & the Arts, Michael Lee, Senator Richard Alston, and lower house opposition spokesman, David Kemp. A courtesy copy was also sent to the Spectrum Manager, Christine Goode.

3/1/95: "Ham radio users attack fee" appeared in *The Age* (morning newspaper), page 3. Television channels 9 and 10 gave nationwide coverage to the amateur fees issue. Ian Hunt contacted the WIA proposing a "form letter" for amateurs to send to members of Parliament to be inserted in *Amateur Radio*.

4/1/95: Immediate reaction from the SMA, Canberra; WIA replied, reiterating amateurs' reaction to the proposed fees.

In the weeks following 4 January, the amateur radio fees issue was publicised by many other metropolitan and regional print and electronic media, stemming from reaction to the WIA's initial Media Release which had outlined objections to the proposed fees increase and detailed the many ways in which amateur radio is of value to the community. The WIA wrote to the Spectrum Manager on 11 January 1995, seeking a meeting over the fees issue. Through January, February and March, the WIA sent material to parliamentarians over the fees issue, supporting the barrage of communications from individual amateurs, with a view to clarifying the issues – which some parliamentarians requested of the Institute. The WIA made contact with Michael Lee's office in February 1995, with a view to negotiating on the issue, ultimately resulting in the meeting with Paul Elliott on 6 March.

There has been no "... attempt to rewrite history". In one page, the WIA had to summarise some 20 major points of Institute activities and achievements. Of necessity, therefore, the paragraph on "Cutting the Cost of Licence Fees" had to be a considerably "attenuated" summary of the Institute's involvement, which nevertheless acknowledged the fact that the amateur radio community had expressed its objections, and that the WIA representatives advocated the amateur community's position to the government

which capitulated and reduced the proposed fee to \$51, announced on 8 March 1995, by the Parliamentary Secretary to the Minister for Communications, Paul Elliott.

It has been clearly demonstrated that the WIA contacted the government very early in the saga over the fees protest, in the first instance well before the barrage of opposition from amateurs around the country, more than a month before Mr Hunt's "form letter" to parliamentarians was circulated, and that the WIA continued contacting the government throughout the period of amateur protest.

Mr Hunt's opinion "... that it was undoubtedly the action of the individual amateur radio operators which effectively produced the resultant reduction in proposed fees ..." is true to an extent, but tells only part of the story. The Institute's statement in the "Activities and Achievements" promotion accurately summarises the situation, "... the WIA publicised the issue widely, through amateur channels and the public media, bringing pressure to bear on the government," which, clearly, it did. Individual amateurs make up the amateur radio community, and so the last sentence of the statement acknowledges their role in

achieving the reduction in fees: *"In March 1995, WIA representatives put the amateur radio community's views and objections to the government and won a cut in the proposed fee to \$51."*

The amateur radio community, of which the WIA is an integral part, certainly exercised some political "clout" last year. Mr Hunt correctly observes "that solutions to problems with bureaucracy can be found if we have the will to make our voices heard."

In inviting the WIA to provide the government a submission on how the amateur radio service might be better licensed in the future, the Institute was given wide scope. A ten-point framework for this was agreed by the Federal Council, circulated and publicised in mid-1995, with a call for Divisions, clubs and individual amateurs to provide input. A progress report was released in November 1995 and published in *WIA News* in December *Amateur Radio*, page 22. Given the opportunity to provide input, to date Mr Hunt has not done so.

Neil Penfold VK6NE
WIA Federal President

Fees Reduced?

I am a member of the WIA and support the concept of a body representing many amateurs. I receive the monthly magazine.

I noted with interest the November 1995 issue of *Amateur Radio* where the WIA was praising the achievement of reduced licence fees. The reduction was reported as being from \$71 down to \$51. Well done.

However, it would seem that someone forgot to tell the SMA; or maybe they don't subscribe to *Amateur Radio* magazine. My renewal notice, received in November, requested payment for \$86.63, which appears to be more than \$51.

What is happening to our licence fees? The year before, under the old system, I paid about \$37. At this rate I hate to guess what next year's fees are likely to be.

I hope the WIA hasn't dropped the ball on the issue of fees. I am sure there are a number of older amateurs who would find a fee rise like this a great impasse.

Glenn Alford VK3CAM
6 Chippendale Terrace
East Burwood VIC 3151

(It would seem the SMA has made a mistake, Glenn. Have you complained to them? All the renewals I have knowledge of, barring yours, were for \$51. Ed)

Morse Survey

I am rather puzzled by the statement in the VK3 Notes on page 26 of December 1995 *Amateur Radio*, regarding the results of the Morse Survey.

Radio and Communications

incorporating *radio* and *Q&A*

Published by
ACP SYME
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PO Box 119,
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Vic 3166
(03) 9567 4200

The commercial side of amateur radio is finally coming out of the doldrums, no better seen than this month's release of the surprising new **Kenwood TS-870S**. This affordable newcomer brings DSP closer to the average shack... and we bring you the full report first in February's **RADIO and COMMUNICATIONS**.

But that's not all we have for the amateur radio operator. How about some of these...

- Construct an HF receiver! The design is by the UK's *Ham Radio Today* magazine team.
- Receiver sensitivity — John Day, VK3ZJF, explains how to *really* understand it.
- Equipment review — Alinco's new DR-610T dual-band FM mobile, turns a few heads.
- Amateur modifications, three DX columns and more... all the best regulars every month!
- HF mobile the Terlin way. We check out the latest HF whips — and *wow* do they go!
- WIA amateur band plans. Are you *really* running that FM in the right spot? Check here...

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Check your local newsagent today!

(PS. We also have the biggest collection of radio-oriented Classified adverts in the country. There's lots of them because they work so well. In fact, this month we have a record number of them. More great bargains for you to drool over — but hurry, these rippers will go fast!)

Retain Morse for Unlimited – YES 357
NO 172 = 67% FOR

Retain Morse for Novice – YES 331
NO 198 = 60% FOR

In each case the voting for retention of Morse qualifications was 2/3rds or more of the votes. The report goes on to state this will be the WIA policy at this point of time. Quite right, as the majority of members who bothered to vote made clear.

However, I am rather puzzled by the following lines, stating a significant number of members believe that a knowledge of Morse SHOULD NOT be a mandatory requirement for an amateur licence.

Surely a vote of 2/3rds of the total voting is significant of the members' requirements, not 1/3rd?

Of course, I am in total agreement that should, at a future date, the vote swing against Morse, then that would naturally be the WIA policy.

Lindsay I LaPouple VK3FR
2/172 Moray Street
South Melbourne VIC 3205

Need for Morse

The WIA is surveying its membership to see which of its members are in favour of retaining a Morse code test as part of the examination to obtain a radio amateur's licence with HF privileges.

As everything these days works on the basis of "user pays, user says", the only people who should have been surveyed are those who hold existing radio amateur licences with HF privileges. We are the users who will be affected if at any time there is a change in Australian/IARU policy in this matter – and the *only ones* who should have a say in this.

A survey carried out by the UK Radiocommunications Agency in 1993 showed that the majority of Class A licensees (those with HF privileges) wished to retain a Morse test as an entry requirement for HF operation, whilst the majority of Class B licensees (those with VHF-only access) saw no need for a Morse test to allow them onto HF.

Let's get one thing clear – as the UK example shows – it is primarily those "non-users" who are too lazy to put their minds to a Morse test who want to get rid of it, allowing them an easy ride to HF operation.

My father G0TYJ passed the Morse test at 69 years of age, at the first attempt. There are many amateurs worldwide who are severely physically handicapped, but still manage a pass at 12 wpm.

To get on to the question of the relevance of Morse code to radio, one oft repeated line is that professional radio communications hardly uses it today. With the majority of intercontinental professional

radio communications being carried using satellites and VHF, there is little need for the operators concerned to use CW. On the other hand, for those radio amateurs interested in experimenting with radio propagation at low signal levels on the lower HF bands, CW is the *only* serious mode to use.

We share all of these LF bands with professional users many of which use CW as an identifying beacon-type signal. The idea of non-CW reading amateurs operating on the LF bands and causing QRM to professional users fills me with horror – especially when we are close to getting an extension on the 80 m SSB DX window thanks to the support of the latter.

The International Amateur Radio Union (IARU) Region 3 conference in 1994 resolved that a Morse code test should be

retained as a pre-requisite for those desiring HF operation. There is no reason to change this, apart from laziness on the part of some radio amateurs and greed (at the prospect of more licence fees) from the licensing bodies of a few countries.

Morse is very relevant to HF amateur operators with interests in DXing and propagation, or those who just like using CW. By the way, I use SSB almost as much as I use CW, when signal levels are good enough.

For me, the idea of doing away with the CW requirement for amateur licences allowing HF operation is totally unacceptable and extremely dangerous.

Steve Ireland VK6VZ
PO Box 55

Glen Forrest WA 6071
ar

Pounding Brass

Stephen P Smith VK2SPS*

When I first took over this column, my first couple of articles included a detailed study of early telegraph codes to include the codes of 1838, 1844, 1851 (International) and a brief mention of the Bain Code (1846).

Since then I've tried to obtain as much historical data on the Bain Code as possible so I can fill the many gaps in my telegraph records.

I achieved success in this field through corresponding with Mr W K (Bill) Dunbar, President of the "Morse Telegraph Club" Grand Chapter I L, and as a result of him passing my request for information to club members.

Some time later I received an historical account on the Bain Code from Dr B Stuart Davis (author of the following article).

The Remarkable Chemical Telegraph of Alexander Bain

Alexander Bain was a native of Edinburgh, Scotland. In the 1840s he was already well known as an inventor and experimenter in the new field of electricity. Turning his talents to the budding art of telegraphy, he first patented a letter printing telegraph in 1839. Soon thereafter he devised what continues to be one of the most widely used methods of high speed transmission, the punched paper tape.

His attention had been attracted to the work in chemical recording telegraphs previously announced by several experimenters. The simplicity, speed and small current needed to produce a permanent record on chemically-treated cloth or paper intrigued early investigators. Prof Coxie of Philadelphia in 1816

proposed a telegraph system based upon the discovery that the passage of an electric current through suitably treated paper caused electrolytic decomposition to take place. Harrison Dyar appears to have employed such effects in his 1827 telegraph strung around the Long Island race track. Between 1838-1843 Davy, Cruickshanks and others in Great Britain proposed telegraphs based upon this phenomena.

It was Bain, however, who recognised its high speed characteristics. No matter how rapidly the sending key was tapped, the chemical action took place so quickly that it was impossible to detect the slightest delay. He invented a device to open and close the circuit under the control of a paper tape perforated in accordance with the signal to be transmitted.

By 1848 he had developed a machine to punch the tape such that he was able to demonstrate his apparatus in New York City at speeds as high as 1,000 words per minute! While the fantastic speeds attained by the perforated tape startled and amazed telegraphers, there is no evidence that it was ever used in actual message handling. A hand key, similar to the ones used by the Morse Lines, was employed.

The receiving mechanism was relatively simple. Paper tape treated with a metallic salt solution was drawn beneath a metal stylus or brush by means of a clockwork-like gear train. Passage of an electric current through the moist paper caused electrolytic decomposition of the salts and the metal stylus, leaving a visible discolouration.

There were two types of recorders. Instruments utilising paper tape, as described above, were in general use at small and intermediate offices. At terminal stations, a paper disc replaced the tape of earlier designs. The clockwork gear train was modified to rotate a brass turntable carrying the paper disc. A spiral groove in the turntable caused the arm bearing the metal stylus to traverse the paper in ever-widening circles.

Bain's telegraph was faster than any previously known method. It was simple, noiseless, and infringed but a fraction on the Morse patent. Bain applied for, and received, a United States patent in 1849. Henry O'Reilly of New York, builder of thousands of miles of telegraph lines, was chaffing under the territorial restrictions imposed by the terms of his Morse license. Witnessing a demonstration of Bain's apparatus in New York City, he set about the formation of a new telegraph company to exploit the Bain machinery.

The North American Telegraph Company was incorporated 10 April, 1849 by a special act of the Pennsylvania state legislature. The first section of line to connect Washington with New York opened for business in Baltimore in the

same month. Construction proceeded rapidly, and by mid-June the Philadelphia office was ready.

The line was built, using No 9 galvanised iron wire. In operation, the Bain system proved to be highly reliable. Under adverse weather and line conditions that crippled the Morse company, Bain's apparatus delivered the accurate copy. Enthusiasm for the chemical telegraph grew rapidly and within two years, more than 2,000 miles of wire had been placed in service. They quickly proved to be a serious competitor of the Morse lines.

Just how serious the competition from the chemical telegraph lines had become can be seen in the dividend record of the Magnetic (Morse) Company. In 1849, before the New York and Washington line of the North American Telegraph company opened for business, 9% was paid. For the years 1851 and 1852, when Bain lines were expanding throughout the Northeast, westward to St Louis and south to New Orleans, the dividend dwindled to 2%. In 1853, one year after the consolidation, the rate had returned to 9%, and continued to enjoy annual increases for some years.

Except for the soft whirr of the gear train, operation of the Bain apparatus was silent. Attracting the attention of a particular station, with several offices on the same line, proved to be a problem. One solution was assignment of time periods when stations were expected to start the recorder and signal "ready for business". This scheme caused serious delays.

Another method – which, it was hoped, might circumvent the Morse patent – was a device called an "alarm", constructed along the general pattern of a Morse relay, complete with electromagnet and armature. Bain's device mounted a pair of glass disks in place of the usual relay contacts. An audible signal was produced when the tongue of the armature tapped first one and then the other disc as it moved back and forth. The courts had no difficulty in declaring it an obvious infringement of the Morse patent.

Morse covered chemical recording methods in his 1840 patent. Magnetic Company licensees instituted suits and obtained injunctions against the Bain apparatus. The Federal District Court, sitting in Philadelphia, held a prolonged hearing on the technical questions raised. In November of 1851 it found that the 1849 patent granted to Bain infringed upon the 1840 patent of Morse.

Meanwhile, the Morse patentees had begun negotiations with Bain for consolidation of the rival companies. Having lost his patent protection and faced with mounting litigation, he agreed to the merger for \$83,000 worth of Magnetic stock.

Substitution of the Morse apparatus and the Morse code for the Bain machinery and Bain's code was ordered on all former chemical telegraph lines. The conversion was completed in less than six months, with the notable exception of the Vermont & Boston Telegraph Company, where the Bain code and recorder remained in service as late as 1866.

The Vermont & Boston Telegraph Company's 229 mile line of No 8 iron wire was completed from Boston via White River Junction to Burlington in 1850. It worked well from a battery of 36 cells. In 1851 it was extended to Rouse's Point, Ogdensburg, NY and Montreal, Quebec. Between 1852 and 1858, additional lines were built from Newport to White River Junction, VT, southward to Springfield, Mass. The total length of the company's lines was 600 miles.

It is probably impossible to determine the day and year when the last recorder was retired and the era of the Bain chemical telegraph ended. However, in the case of Bain's code, we can detect its presence in office calls such as "AA" Manchester, NH, and "PU" Bradford, VT (Morse equivalents for the letter "M" and letters "BD" in Bain code). These calls were still used into the late 1920s on Western Union Lines that had been a part of the old Vermont & Boston.

Here are a few calls from the chemical telegraph days, first in Bain, followed by the Morse equivalents, BOSTON, B, F; MANCHESTER NH, M, AA; WHITE RIVER JCT VT, J, V; NORTH THETFORD VT, NT, UTB; BRADFORD, BD, FU;

NEWBURY, NB, UTF; WEST BURKE, WB, MIF; and LONDONVILLE, NP, UTK.

Bain's code was put to unique use by US Army surgeon Dr Albert Myer. Myer used the code to communicate with deaf mutes, and published a paper in 1851 describing his successful experiments. In 1861 he founded the Signal Department – forerunner of the Signal Corps of today.

He continued the use of the Bain code in army communications for some time. The outbreak of the Civil War forced a common language upon telegraphers of the US Military Corps and the US Signal Corps. The Morse Code was now in universal use by commercial and railroad operators, and the Army had no choice but to change.

Bain's high-speed automatic transmitting and receiving method profoundly affected developments in telegraphy, both landline and cable, for many decades.

One of the first to be galvanised into action was Prof Morse. He proposed to send messages by the conventional Morse key to be received on a Morse-Vail embossing register. A probe, sensitive to the indentations in the register tape,

WIA News

Low Frequency Band Nearer for UK Amateurs

Amateurs in Britain will likely be able to use an allocation in the low frequency part of the spectrum in the near future, according to a release from the Radio Society of Great Britain (RSGB).

The RSGB said that the British Radiocommunications Agency (RA) has agreed on a frequency around 73 kHz. The move is a result of negotiations between the RSGB and the Radiocommunications Agency (which has a similar role to our Spectrum Management Agency). The RSGB's Licensing Advisory Committee reported in December that the release of the LF allocation was getting nearer, and now depended on discussions on the actual terms of licensing, which were continuing.

The RSGB originally explored the possibility of an allocation around 87 kHz.

controlled a pair of contacts, thus transmitting the recorded message to the telegraph line.

This scheme was destined to be reinvented by scores of telegraph people, including Thomas A Edison and Walter P Phillips.

Finally, the chemical telegraph demonstrated that it could work over longer distances with less battery, and at higher speeds than the Morse system. Why, then, was it not adopted?

The sensitivity which enabled the chemical telegraphs to record with extremely small currents was, at once, its virtue and its undoing. Where a single line was strung on a pole, earth currents were

the only problem. But as soon as additional wires were installed, induced currents between the different lines caused unwanted signals on the tapes, blurring the recording and resulting in serious errors. The moist chemical-treated paper was, to say the least, messy and a probable health hazard.

I would like to thank Dr E Stuart Davis for sending me this historical account of the "Bain Code" and for allowing me to reproduce it in this column.

I would also like to thank Mr Bill Dunbar (president) and the members of the "Morse Telegraph Club" for their assistance.

*PO Box 361, Mona Vale NSW 2103

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QSLs from the WIA Collection

Ken Matchett VK3TL * Honorary Curator WIA QSL Collection

Amateur Radio in the German Reich - The Long Struggle for Legalisation

by Wolf Haranth OE1WHC

(Translated from the German by Ken Matchett VK3TL)

As in other parts of the world, particularly the USA, amateur radio had a hesitant beginning in Germany. A legal barrier had been set up, namely "The Law pertaining to Telegraphy", (*Gesetz ueber das Telephraphenwesen*) which, from 6 April 1892, had reserved all wireless communications for use by postal and military authorities.

The first two radio amateurs who began to transmit in 1920 did so illegally using self-assigned call-signs. They were Werner Slawyk, WYKE and Richard Dargatz, RITZ. Others followed, including one with the mysterious call UHU, who operated from Heidelberg. At that time considerable investigative skill was required to determine the address of the sender and to enable the exchange of QSL cards.

In 1924 the German Post Office (*Reichspost*) sanctioned the reception, free of charge, of wireless news broadcasts, thus issuing the first listeners' licences for the new medium of radio. However, the ban on the issue of transmission licences continued. After this, most of the local radio clubs combined to form a transmitters' collective (*Funkkartell*) in order to force a relaxation of these strict regulations.

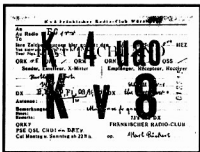
Out of this amalgamation of clubs was formed in 1925 the German Technical Radio Organisation (*Deutsche Funktechnische Verband - DFTV*). From the very beginning the DFTV had up to 50,000 members, amongst whom, however, there were barely three dozen transmitting amateurs. These used "K" for Germany as

the first letter of their call-signs, followed by one further letter and a numeral. Thus Rudolf Horkheimer, Dip Eng, a founding pioneer, went on the air as station KY8.

For wireless listeners, the German Receiving Service (*Deutscher Empfangs-Dienst, DED*) issued the first DE call-sign numbers. This organisation amalgamated with the German Transmitting Service (*Deutscher Send-Dienst, DSD*) within the DFTV and from May 1927 became the German Amateur Transmitting and Receiving Service (*Deutscher Amateur Sende und Empfangsdienst, DASD*), a representative body to the hitherto independent organisation of unlicensed German amateurs.

The Post Office had, up to this time, issued only a few official call-signs - from KB to KZ - and now ceased issuing them altogether. Unlicensed operators (*Schwarzfunker*) gave themselves their own call-signs which consisted of the letter K followed by one numeral and two letters. (Licensed stations had an EK plus one numeral and two letters in their call-signs.) Later the call-sign suffix of the illegal operators was extended to three letters since they wished to distinguish their own calls from the few legal ones using only two letters.

Examinations were held in strict secrecy, illegal licences (*Schwarz Lizenzen*) issued and QSL cards exchanged via bureaux. When the issue of legal licences (*Weisse Lizenzen*) to scientific institutions, radio manufacturers and privileged individuals by the German Post Office began in 1928 (all with the D4 call-sign), both illegal and semi-illegal (*Halb schwarzen*) operators adopted the D4 call-sign. The German Post Office took very strong measures against unlicensed operators. The much quoted



QSLs from the 1920s and 1930s. We seek the assistance of all Old Timers in our task.

Translator's Note

QSL cards are exchanged on a regular basis between the Austrian QSL Collection and our own WIA National QSL Collection.

Thanks

The WIA would like to thank the following for their kind donation of QSL cards to the Collection: Ron VK4BG, Malcom VK3CLM,

Bob AA9DX, Adelaide Hills ARS, Jim VK4KJM, Hans SWLVK4/HE9RFF, Mike VK6HD, and Don VK3ADI.

Also the friends and relations of the following Silent Keys: Chas Harrison VK7CH, Ian Lamont VK3KAB, Ken VK7KA, James Carr VK3JV, Austine Henry VK3YL, and Ken Grimes VK6AKG (courtesy of Jeff VK6AJ).

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Repeater Link

Will McGhie VK6UU*

For Sale

Our portable WICEN repeater in VK6 has a problem with pagers. Considerable efforts have been invested in trying to sort the problem out with no success. The receive frequency of the repeater is 147.775 MHz and, being a portable repeater, is offered no interference protection by the SMA.

Efforts to reduce pager interference included a front end crystal filter. That's right, front end crystal filters can be bought for the VHF band. They are not cheap but offer very narrow bandwidth of about 15 kHz around the receiver's input frequency, and are connected between the aerial and the receiver. Attenuation outside the 15 kHz bandwidth is better than 20 dB, with up to 30 dB attenuation on some frequencies.

To use 147.775 MHz as an example, a frequency of 147.785 MHz and above is attenuated by 20 dB or more. The input output impedance is 50 ohms. This type of filter can reduce or eliminate interference caused by overload in the receiver by signals very close to the receiver's frequency.

However, even with the inclusion of this crystal filter in the WICEN repeater's receiver, pager interference remained. The source of the pager interference may not have been a receiver problem but too much time had already been spent on trying to sort the problem out, so a frequency shift was made. One of the few remaining repeater frequencies below 147 MHz was chosen.

The result, one surplus crystal filter. These filters only operate on the frequency they have been made for, so if you would like to obtain the crystal filter, contact me and I can let you have the details.

29 MHz

The 29 MHz gateway port on our VK6RLM two metre voice repeater is still not licensed. The licence was applied for some five months ago. A request from the

SMA for \$24, plus \$91 for one hour's investigation, resulted in our repeater club sending off \$24 only. Would the SMA miss the \$91 or not?

After five months they did, and returned our \$24 cheque. The next effort is to request the SMA to detail exactly what is done for the \$91. This could be a long wait but this is what we have become used to. We waited almost five years for TLS11 — was it worth the wait?

While on the subject of 29 MHz gateways, I have heard that Wollongong has a 29 MHz gateway operational on 29.620 MHz. This information came from Grant VK5ZWI who is concerned where all this is leading, and I must admit it does pose a few questions. It all relates to silly regulations. Gateway stations from 29 MHz onto an existing repeater are not allowed except when placed in the 29 MHz repeater segment. This is a silly place to put them but, frustrated with no where else to put them, there are only two choices — locate the gateway in the repeater segment or not have the gateway at all.

The way to change this is to spend considerable time preparing a submission to the WIA to either support a gateway sub band or not on 29 MHz and, if they do, negotiate with the SMA to allow gateways. This begs the question, what has it to do with the SMA? Why do we amateurs have to do this every time someone comes up with a bright idea. The point of amateur radio is experimental. As soon as you place detailed regulations on experimentation, experimentation is limited or lost altogether.

Costs

The changes to the way in which repeaters are licensed, in particular the cost of the licence, is a worry. In VK6 our digital network is undergoing considerable change and, as a consequence, frequencies for digipeaters and remote BBSs are changing. This appears to mean investigation costs every time a frequency

legalisation appeared for the first time in Post Office Official Publication No 19 dated 20 February 1931, but in what form! The decree stated: "The activity of transmitter operators will again be permitted if they are engaged in experimental work conducted in radio clubs and do not employ an open antenna lead".

In 1933 there followed the forceful seizure by Hitler of the DASD. (Quote: "Which up to now has evidently been run by Marxists and operated on Marxist lines"). At the same time, the DASD was placed under the German Ministry for Propaganda (*Reichspropagandaministerium*) in order to (Quote: "Achieve cooperation with the SA, SS, NSBO, Stahlhelm and the Aerial Sports Organisation (*Luftsportverband*) and to pursue the aims of the country's defence"). Some official licences were unhesitatingly issued without the need for examination to faithful Party members (Quote: "In order to show the world the progress achieved in the fields of optics and sound by the new Germany").

On 1 September 1939 the immediate surrender of all amateur radio equipment, without compensation, was decreed by the Post Office authorities. At the same time all 529 licences were rescinded. Only three stations were to remain with the commission to (Quote: "continue to represent the radio operators of Germany to the rest of the world"). Later, the High Command of the German Army issued in all 35 authorisations for wartime radio transmissions, (*Kriegsfunksendegenehmigungen*).

In the historical section of the (Austrian) QSL Collection there are, at the present time, approximately 200 German station



is changed. If \$91 an hour is charged for every frequency change the total cost will be considerable. I find this all a bit too much.

The SMA have every right to want to know where every particular remote amateur digipeater or repeater is, but I don't believe the \$91 an hour is right. We can set up a portable repeater or digipeater without the SMA doing a site compatibility check and leave the system running for up to a week, so why does the time in which it operates change the situation and attract this cost? If the SMA allow us to operate such systems on a portable and, I presume, unattended basis, why should it be so different to extend this period and not incur a cost?

The simple solution would be to inform the SMA of the new installation with all the details as to location, frequency and contact persons. The SMA do not run a site compatibility check and hence incur the \$91 per hour. After one week (or longer) the amateurs then contact the SMA to ask if any reports of interference to other services have occurred. If not, the system is licensed and allowed to operate as a permanent installation. Less work for the SMA and less costs for the amateurs.

Flying East

As VK6's alternate councillor I flew east at the end of October 95. The weather in Perth was warm and sticky with large amounts of haze all around indicating an inversion. Once the plane took off and climbed over the inversion layer the height to which the inversion layer went was obvious. The top of the cloud, ie haze level, was as straight as the eye could see, for as far as the eye could see. The path was open on VHF between VK6 and VK5 over the bight, so it was with interest I watched the cloud as the plane headed east. All the way to Adelaide the same cloud formation persisted, with the top of the cloud base absolutely straight all the way. The plane was flying at about 35,000 feet and the cloud was only a few thousand feet below. If the top of the cloud indicated the top of the inversion then this inversion extended up to about 30,000 feet. Not much to see out of the window for most of the passengers, but I found it interesting.

WIA Convention

The flight east was to take me to my first WIA Federal Convention as VK6's alternate councillor. I was looking forward to seeing the sharp end of the WIA. For years I had wondered what went on and how decisions were made. Many an idea or submission from myself had appeared to disappear into these Federal get togethers and I wanted to find out, along with representing VK6, how it all took place.

Rather than go into detail, generalisations are simplest. For a start the con-

vention was well run, from the accommodation in a Melbourne hotel, which also housed the conference room, to the food. There was nothing lacking in the running or convenience of the conference situation.

From 9 AM Saturday morning it was straight into WIA business. The pace was to move along as there was a great deal to plough through. I found at times it was too much, with some items possibly needing more time, but there was limited time.

Day two was the same. However, the convention finished slightly ahead of the forecast time by about an hour. The timing was well arranged.

After it had finished I had formed some opinions on an area of the WIA I previously knew little about. The Federal councillors make up the most important part of the WIA in terms of policy and direction. They are required to decide the issues. However, many decisions require research and effort by someone. It often gets down to one councillor, or any other WIA member who can be seconded, doing much of the spade work on their own and then reporting back to council. It might sound easy but it is not. The end result can be very drawn out and one individual is required to devote a lot of time.

Another point I noticed at the conference was a degree of them and us. The them and us being the Federal WIA and the individual Divisions. At times the Divisions seemed to be in conflict with the Federal WIA simply because they have different names. I could be wrong and it may be that this is the best way for it all to operate.

Communications

The biggest problem we face as an organisation is poor communications. Communications between the individual Divisional councillors, and communications between the Divisional Technical Advisory committees TACs, to give an example.

The repeater TLS11 is a current situation that springs to mind. The TLS is forwarded to each Division, at least that is what should happen. I don't know if each Division received one, if it was received early enough to comment on, and if it reached the correct amateurs who should be commenting on it, who may not necessarily be the TAC person. How can I find out if each Division received its copy on time and that it went to the correct amateurs for comment?

One answer is that I could ring each Division and track the information down. There is a degree of luck involved in this as it depends where in the chain the correct person is who can supply the information. It may not be the Divisional President, or the secretary, or the TAC. It could be a long road to finally contact the right person and I have to do this for each Division. A very slow and costly process.

Furthermore, what interchange of information occurred between the Divisional TAC's over TLS11? The answer, to my knowledge, is none. What if a particular Division decided that TLS11 did not need any changes, but this was based on limited knowledge of some parts of TLS11 that could hinder repeater development now or in the future. A particular Division missed some thing and as a result supported a part or all of TLS11. Contact between the TACs could have supplied information or a point of view that was missed.

The point of this is that, as an organisation with different parts, making up the organisation communication between these parts is vital. We do not have that communication! Prove me wrong if you can. I hear you saying phone, Fax, or snail mail. Not good enough because these means have existed for years and we are not communicating. Some amateurs have access to STD phones at no cost due to work. Most do not.

The Answer

The answer is simple and, I believe, the only answer – electronic mail. Until the WIA at the administrative level becomes connected by an effective electronic mail server we will continue to stumble along. Strong words I know, but the present system is not working. Just think, if all the Divisional Presidents, TAC's, FTAC, Divisional Councillors and any other relevant part of the WIA were connected via e-mail, how much easier and effective we all could be.

There is a move to introduce just such an e-mail system. A well thought out and costed system has been proposed by Richard VK1RJ. A computer known as a server would reside at the Federal office and be connected via a modem to a phone line. Access could then be made by those amateurs who have access, to pick up and leave mail on all order of things relating to the running of the WIA and amateur radio in general. There is detail to be worked through but the sooner such a system goes into operation the sooner the WIA can function at a higher, more efficient level. Perhaps the wait for TLS11 of almost five years could have been shortened and comment on the TLS could have been more wide spread and conclusive.

Next Month

Next month I hope to have an alternate method of converting the E band 828 exciter to 6 metres. This conversion was put together by Don VK6HK for a beacon and uses a very different approach.

*21 Waterloo Crescent, Leamurde 6078
VK6SLU & VK6EGR

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VHF/UHF - An Expanding World

Eric Jamieson VK5LP*

All times are UTC.

VK5VF VHF/UHF/SHF Beacons

David VK5KK, from the WIA (SA) Beacon Committee, reports the interesting information that over the past few years the upgrading of the VK5VF Mt Lofty transmitting site (700 m ASL) has been slowly progressing to the point where we now have all planned beacons in full operation, with the exception of 3.4 GHz.

After a series of trials the following beacons were commissioned in final configurations on 16/12/95. I have also summarised the current status of the existing beacons. **Note: All beacons are horizontally polarised.** F1 keying is -500 Hz on key down, 10 wpm. The 10 GHz beacon is narrow-band.

Call	Freq(MHz)	Eirp	Mode	Heading	Comment
VK5VF	52.450	10 W	A1	Omni	ID every 30 seconds
VK5VF	144.450	15 W	A1	Omni	ID every 30 seconds
VK5VF	432.450	10 W	A1	Omni	See Note 1
VK5VF	1296.450	30 W	F1	135/305°	VK3-VK6 Note 2
VK5VF	2403.450	50 W	F1	200/360°	VK6 - Adelaide
VK5VF	10368.450	10 W	F1	Omni	See Note 3

Note 1. The 432 MHz beacon is remotely commandable in power level. The beacon listens on its frequency for 1.5 seconds before ID: transmit on F3 single DTMF for power as follows: 63 mW = 1, 250 mW = 2, 1 watt = 3 and (Default) 4 = 4 watts. Auto reset to full power after 30 minutes.

Note 2. Both the 1296 and 2403 MHz beacons have better than ± 300 Hz stability over normal day temperature variations. Both use active temperature compensation rather than oven technology. Antennas are stacked waveguide (1296) and slotted waveguide (2403) giving -3db beamwidths as shown. The figures are for the directions of the main lobes which presently favour the VK3 and VK6 paths.

Note 3. The 10 GHz beacon runs approx 800 mW to omnidirectional slot antenna. Stability + or - 1 kHz approx over day temp cycle. Keyed at same time as the 1296 and 2403 MHz beacons. We have the option available to make this beacon directional, with remote commanding on 1200 MHz when commissioned.

Adelaide Users

All beacons are audible with the most basic (working!) equipment. The SHF beacons are audible with minimum antenna if you have a view of Mount Lofty,

although coverage of the 1296 beacon is deliberately poorer due to beam heading (into northern areas). Eric VK5LP reports the 1296 MHz beacon is S9 at Meningie, 120 km.

The 2403 MHz Beacon can be heard with any Mode S converter - just tune to an IF of 147.450 MHz. Good beacon for propagation warnings of 10 GHz. The 10368 MHz beacon can be heard on open waveguide with a narrow band receiver within line of site; worst path is due north, due to the summit peak blocking line of sight. A test carried out over the New Year weekend confirmed all beacons are audible in most areas over a 150 km radius of Mount Lofty.

VK6 Users

The Eirp of both the 1296 and 2403

Beacons should be sufficient for reception (1296 has been previously heard 1991/2) during ducting. Eirp of 10368 MHz may restrict it to local ducting up to 400 km, but who knows! We have room for a 600 mm dish to point at 262° (Albany); any interest in this option should be directed to VK5KK. Lower frequency beacons as per ducting or Es as usual.

VK5 South East/VK3 Users

Users in this area will have poorer coverage from the 2403 MHz beacon, with an estimated equivalent of 1 W Eirp in that direction available. 1296 MHz has a good lobe to the South East. 10 GHz should be of great interest under ducting out to 300-400 km.

General

VK5VF is one of the oldest VK Amateur Beacon sites, established in 1961. The latest UHF and SHF beacons are a result of private donations and funding in the interest of promoting the use of these frequencies. The following have made all this possible. VK5EME (Exciter PCB design), VK5ACE (432 MHz), VK5ZO (2403 and 10368 antennas), VK5NY (10 GHz PA) and VK5KK (Design/Assembly & Tuning). Any reports and/or, etc direct to VK5KK@VK5LZ or e-mail Tecknolt@ozemail.com.au, or phone 08 3074579 24 hours.

3456.450 MHz is the next stage, does anyone else have equipment? .. **de VK5KK.**

Trevor VK5NC reports that the Mount Gambier beacon VK5RMG is now operational on 144.550 MHz running 25 watts to a crossed-dipole antenna. Ident is **VK5RMG Mount Gambier QF02.**

The West Australian VHF Group Newsletter advises that the beacon **VK6RPH** is on air continuously from the Channel 9 TV tower at Walliston on the top of the Darling Scarp, just east of Perth. Beacon frequencies are 50.066, 144.460, 432.460 and 1296.460 MHz. Locator is OF88AA. The four antenna systems are horizontally mounted at 23 m. Transmit powers are nominally 10 watts each and identify with **VK6RPH** Perth every ten seconds.

VK - ZL DX

A most welcome letter arrived from **Cliff Betson ZL1MQ**, editor of the VHF-UHF Column of *Break In* magazine for NZART, with details of the VK-ZL contacts on 50, 144, 432 and 1296 during the period 11/11 to 10/12/95. Auckland city had the most openings with ZL3NE/1 scoring best on 50 and 144 MHz. Cliff said he was second on 50 MHz!

Contacts were on 50.0 to 50.5 MHz, and on both sides of 144.1 MHz, being direct contacts using SSB or CW. ZL1 contacts to ZL2 on 50 and 144 were via ground-wave or backscatter, while ZL1 to ZL3-4 were Es or backscatter.

Cliff said, "The large Sporadic E cloud in the northern area of the Tasman sea was the reason for most openings occurring to VK4 from ZL1, with the spill-over to VK2, plus at times a trough of low pressure between VK4 and ZL1. Next year we may see the Es cloud further south giving ZL2-3 large openings with ZL1 on the edge".

Due to the overall large number of contacts, I have omitted the ZL to ZL contacts which numbered 19 on 50 MHz, one on 144, and four on 432. There were 93 contacts between the VKs and ZLs, plus three VK9 to ZL. The band was open on 17 days during the month.

50 MHz: ZL3NE/1 worked VKs 2ABW/2, 2AIF, 2BIT, 2DN, 2DVZ, 2FZ/4, 2HC, 2YDC, 3AMX, 3LK, 3YDE, 4AFL, 4APG, 4ARN, 4CF, 4GPS, 4JHM, 4KK, 4KMA, 4OE, 4PU, 4ZAZ, 5BC.

50 MHz: ZL1MQ worked 2AIF, 2FLI, 2PB, 2YDC, 3AMX, 3DQJ, 3DUQ, 3DUT, 3KCM, 3OT, 3YDE, 3ZNF, 3ZNF, 4ABW/2, 4AFL, 4GPS, 4GWC, 4KK, 4TQ, 4WAG, 5BC.

50 MHz: VK4AFL was also worked by ZL2KT, ZL1TMF, ZL2WNB, ZL2AGI; VK4DO, VK4DN, VK2ARB, 5BC worked ZL2AGI; VK4DWJ worked ZL2AQR/3; VK4GPS, VK4ARN worked ZL1TMF,

VK2AIF worked ZL2WNB, VK2FZ/4 worked ZL1AVZ and ZL4AAA. A number of stations were worked via the VK six metre repeaters.

At 0537 on 10/12 **ZL4TBN** worked Jim Smith **VK9NS** on Norfolk Island, and again on 11/12 at 0636. Jim was also worked by **ZL3NE** on 11/12 at 0638. Unconfirmed reports say Jim also worked VK2, 3 and 4 on 50 MHz.

On 144 MHz there were 51 contacts to ZLs, plus the first recorded contacts to **VK9NS** on 30/11 by **ZL4AAA** and **ZL1IU**. A good effort. 144 MHz was open on six days with the best day 30/11 when 21 contacts were made. Open 21/11, 29/11, 30/11, 3/12, 6/12 and 10/12, usually in the mornings from 1900 to 0240, then again from 0620 to 1200. The length of the openings tends to suggest the contacts were mainly tropo, with perhaps some Es assistance at times.

144 MHz: Worked were VKs 2DVZ, 2FZ/4, 2RSY/b, 4AEN, 4AFS, 4APG, 4ARN, 4ATG, 4DH, 4GMC, 4GPS, 4JSR, 4KSO, 4KZR, 4LC, 4LP, 4LV, 4OE, 4PF, 4PU, 4QV and 4RH.

ZLs were 1AVZ, 1HR, 1IU, 1TWR, 2AGI, 3NE/1, 4AAA, ZL3NE made 29 contacts, ZL1TWR made 15. In addition, several VK2s and VK3s contacted ZL3s using repeaters. Using 432 MHz, VK2FZ/4 worked ZL4AAA and ZL1AVZ on 29/11.

One contact was made on 1296 MHz between **VK2FZ/4** and **ZL1AVZ** on 29/11 for what is probably a new 23 cm distance record for ZL. VK2FZ/4 is 83 km north of Brisbane and ZL1AVZ is West Auckland, on the coast. The exact distance is yet to be determined but is in the region of 2250 km over the sea for most of the distance.

Obviously it was a very exciting period for the east coast Australians and also kept the New Zealanders on their toes. It will be interesting to receive their next report

Packet Radio

Steve VK5ASF, Chairman of the SA Packet Users Group, advises much behind the scenes work is required to keep packet activities operational.

There has been a large number of bulletins which the Sysops felt violated our network's Acceptable Use Policy (and SMA regs!). Monitoring for these bulletins is a real "chore" for all the Sysops.

There is a great deal of interest in high speed packet. Various people are examining options for both high speed user ports and a high speed backbone to link the major BBSs. There are some quite large costs associated with each. However, individuals are encouraged to carry out their own research and experimentation if they are interested in this area, as a high speed BBS/backbone infrastructure will take quite a long time to put in place.

Band Reports

From Brisbane, Peter VK4APG sends a report, that on 6/12 he enjoyed a 2 m Es opening to ZL. No doubt the other openings via tropo late November will be well reported but I didn't hear too many other stations on the sixth. Got home from work about 0500 to hear VK2ABX in Orange on six, so put key down on 2 m beaming VK3. VK2APG and VK2BIT appeared on six with big signals then when VK2ZVF in Newcastle appeared I turned the beam 90° to the 6 m path, called CQ on 2 m and Bob ZL3NE came back just like a local 40 dB over 9.

0637 ZL3NE 5x9 sent, 5x9 received; 0639 ZL1TWR 5x9 5x9; 0640 ZL1HR 5x5 5x9, 2.5 watts! 0643 ZL1IU 5x9 5x5; 0645 ZL1PE 5x5 5x2; 0648 ZL2AGI 5x2 5x4; 0657 ZL3TIC 5x1-2 Christchurch - using vertical, no two-way; 0657 ZL2UCG 5x3 5x6; 0738 ZL1SL 5x7 5x3-5.

I'd heard the tip to turn 90 degrees to the short skip 6 m stuff...it works!! Seasons Greetings. Good DX.

From Ron VK4BRG, six metres was open nearly all day Sunday, 26/11, with Es to VK3 and VK5. At 0241 the band opened to the Perth area... worked VKs 6JJ, 6WD, 6ZPP, 6KZ, 6TRG, and finally 6RO at 0314 UTC.

From Steve VK3OT, Today, 14/12, propagation on six metres was very different, no doubt due to the influence of the solar event on the E layer. Backscatter signals and very strong ZL/Tasman Sea signals were the order of the day. The first 2 m ZL to VK9 Norfolk Island contacts were made, and VK9NS worked into VK at 2000z and again at 0700z on 50.110, ZL1, 2, 3 and 4 signals were up to S9+ during the afternoon. ZL TV video and respective sound carriers up to and including 67.750 were heard and watched on TV. At one stage 45.240/250/260, 55.240/250 and 62.240/250/260 were all S9.

Solar Noise burst from 0240 for three minutes up to S7 followed by highly enhanced backscatter conditions. The previous day, and for the following 36 hours, the sun noise has been way above normal conditions. Today it is back to normal. 48 MHz TV was heard on backscatter from the N/East during the opening to Norfolk Island.

I heard a couple of stations discussing the wisdom of preparing for Cycle 23 this early. Moral to the story and from experience gained in the past 10 years - the band is where we thought it was in 1985/86, but we didn't gear up until the large opening of March 1989.

The point is, if a mediocre station running 75 watts to a five eYagi was heard in Europe in December 1988 and the 53 MHz TV sound was audible from Spain, the

Europath was available (in hindsight) from October 1988, but we didn't work anything until mid 1989 - 6 to 12 months later. You can never be too prepared.

The best DX was at the beginning (1989) and end (1992) of the major enhanced period of Cycle 22. With a projected peak of mid 1999, you need to be set up by next year to exploit March 1997. The first of the large JA openings will occur in either of the next two equinoxes. There have been F2 JA paths on October 13/14, Nov 7/8 and Nov 15/16 to VK south and ZL.

Do not make the fatal mistake of thinking that, if stations in Northern Australia have no DX, down south is not possible. I worked into Europe in October, November, December, January and February 1989, 1991, and 1992. Up North the European propagation was earlier and later but not much during December and January.

The only problem is wading over the tops of countless individuals who insist on using the 50.110 international call channel as a local E layer chat channel. You will have to coordinate the DX yourselves and move it around.

AH8A from American Samoa (WB6FBN) told Steve VK3OT that he is interested in re-activating six metres. The island was last worked from VK in April 1981 on 52 MHz. **Mike VK3BDL** first reported the beacon on 50.104 or 20/4/1981 at 2215 and a few VK3s (BDL, XQ, OT, et al) made two way contact. Cards were hard to get, and probably still are rare.

VK3OT said that on 21/12 the MUF was very high, and E layer/Field Aligned Signals reached 92.77 MHz to Townsville. The 87.270 video is unique to Townsville and was S9+. The 64.250 Channel 2 s was in, also the VK4ABP beacon. Channel 0 Toowoomba, at a lower frequency and thus shorter skip, was viewed in full colour.

From 0400z to 0900z: 45.240 59, 45.250 59, 45.260 59, sound 59, 50.120 ZL3NE 55, 51.029 ZL2MHB 55, 50.110 VK1MJ, VK6WD, VK6YJW worked. 50.130 VK6ZAK worked. 55.240 TV 59, 55.250 59, 52.345 VK4ABP/b, 50.057 VK4RGG/b, 50.065 VK6RPH/b, 50.077 VK4BRG/b. 87.270 video Townsville 59+, 92.770 sound Townsville, 50.110 ZL1MQ calling VK6 DX and worked VK6WD.

46.260 Tamworth video 59+, 52.005 Tamworth sound 59 stereo pair. 28.230 ZL beacon. 28.261 Perth beacon. 48.2396 TV 55, VK6YU working VK7GUN, VK6BE working ZL, VK5, VK3, VK6RO, VK6JJ, VK6RPH/b 559, VK4PU.

From **Bob VK6BE** in Albany, My six metre log for 21/12 - it would be interesting to compare the log of VK6HK with mine over the same period on 21/12/95 from 400 km south of Perth.

0745 beacons VK7RAE, VK3SIX and VK2RHV (Newcastle). Worked: 0750

ZL3TLG, 0750 ZL3ADT, 0803 VK5ZBK, 0805 ZL3AAV, 0817 VK3LK, 0827 ZL2AGI (CW please note!), 0845 ZL2TPY, 0850 VK7GUN, 0855 VK5BC, 0902 ZL3TIC, 0907 VK5AIM, 0925 VK3AMX, 0935 VK3ATQ, 1005 VK2FA, 1050 VK3DUT, 1100 VK3KAQ (ex-VK6ZCN), 1150 VK5AAK.

Band then folded. Did Don go out that night or did the band fold earlier in Perth than it did here?? Also heard VK6JJ and another Perth station (VK6YU??) on back scatter.

By the way I read a query about capability on RTTY etc on VHF. I can work RTTY, FEC, AMTOR, PACTOR etc on all bands up to and including 144 MHz if anyone is interested in trying to make a contact on one of those modes. I could also get on to 432 with any of those modes without much bother if there was interest, but I'd want to know there was a chance of working someone before I'd go to the trouble of wiring the necessary plugs! Activity on 432 is pretty rare in these parts. I got on to ATV on 70 cm once but after a few months of watching myself I gave that away! Narcissus? No, not me! Cheers, Bob VK6BE.

From Don VK6HKH, 50 MHz propagation from Perth on 21/12/95: 0234 VK2FZ/4, 0250 VK4KK, 0251 VK2KF, 0803 ZL3TIC, 0810 ZL2AGI, 0813 ZL2AAA, 0821 VK3LK, 0828 VK7GUN, 0835 ZL2TPY, 0844 VK7RAE/B. This list is by no means exhaustive but indicates widespread E on 50 MHz, as sampled during the day.

From VK4TUB, Since there has been so much DX round the northern tropics lately, we have decided here in Townsville to start a local six metre DX newsletter on a monthly basis, to keep all the Queensland operators in the picture as to what to listen for... thanks for your support and we'll start the ball rolling shortly... Tub VK4TUB.

Geoff Brown GJ4ICD e-mail via Dave VK2KFU says a group of nine operators are on Marion Island until May 1996, with a beacon on 50.200 signing ZR1BCE/ZS8, running continuously, using 170 watts to a five element Yagi beaming to South Africa. Marion Island is SSE and about 2000 km from South Africa, and in the southern Indian Ocean.

Trevor VK5NC in Mount Gambier was busy at the rig during December. On 12, 13 and 14/12 he worked ZLs 2, 3 and 4 on 50 MHz. 15/12: Good two metre opening to VK3, signals to 5x9, included were VK3S DEM, XRS, 3AUU, KDO, DQW, XPD, and VK3XRS on 432 (600 km) 5x5; 16/12: 432 to VK3RZ, VK3ZQB, VK3IL, and VK3RZ on 50 MHz; 17/12: VK3KXJ and VK3HY on 144; 21/12: VK3DEM, VK3TBM on 144 and 432; 23/12: VK3ZQB 1296 FM 5x9, VK3RZ 144 and 432; 24/12: VK3XRS, VK3XBD 144 and 432; 25/12: VK5NY 1296 5x7 at

0000 and again at 0234, VK3DEM and VK3XRS 144 and 432; 26/12: 1296 to VK3ZQB, VK5NY and VK3KWA.

27/12: Various contacts to VK3 and VK5 on 1296, 432 and 144, most signals 5x9. 28/12: VK3s on 144 and 432, VK7XR on 144, VK3ZQB 1296, at 1240 VK3XRS 1296 at 600+ km, 2330 VK5RO, VK5ZRK and VK3s; 29/12: VK3ZQB and VK3XRS on 1296, many VK3s on 144 and 432; 30/12: VK3XRS and VK3ALZ on 1296, VK3AUU running 2 watts and 5x9+ on 144.

30/12: 10 GHz contact between VK5NC at Blue Lake Crater and VK3XPD on Mount Dandenong at 2150, 5x4-5x9, distance 400 km. Heavy rain from 0000 prevented further contacts.

Closure

There has been a lot of information to sift through this month, much of it received via

packet, which is fortunate in one way as few people write with information these days. I was fortunate to receive the pile of information about the trans-Tasman openings from Cliff ZL1MQ. I knew many contacts had been made but lacked the details.

Closing with one thought for the month:

1. Age is mind over matter. If you don't mind, then it doesn't matter. And something different -

Bud VK4QY said he saw the following on the back of a T-shirt - "The older I get, the better I was." There are many areas of life to which this could apply.

73 from The Voice by the Lake.

*PO Box 169, Monrovia SA 5064

Fax: (085) 751 043

Packet: VKSLP@VK5WI #ADL #SA.AUS.OC

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Silent Keys

Due to space demands obituaries should be no longer than 200 words.

The WIA regrets to announce the recent passing of:-

S E (Syd)	MOLEN	VK2SG
W E E	FIELD	VK2PWU
W M (Bill)	CAVANAGH	VK2WC
N J	HIRD	VK6KKR
F E (Edgar)	NICHOLLS	VK7RY

Syd Molen VK2SG

Syd Molen passed away on 30 December 1995 aged 76.

Syd was always interested in radio and electronics. He was an avid SWL in his teenage years. Even in his school days I have been told that he had bits and pieces of crystal sets hidden in his desk.

In 1939 he joined the RAAF and served throughout the hostilities on Hudson and DC3 aircraft in the operational Pacific theatre of war. As well, he was an instructor in the field of electronics. It was during his war service that he met and married Jean.

After his discharge from the Air Force in 1945, he became involved with the Royal Flying Doctor Service as one of their leading mobile technicians in the far outback of Queensland and the Northern Territory. It was during this time that Syd became a licensed amateur with the call sign VK4SE.

After leaving the RFDS he obtained his Broadcast Certificate and was employed with various broadcast stations, ending up with 2UW in Sydney. He then took out his current call of VK2SG. From here he broadened his horizons by assisting with the planning and eventual opening of Channel 10 studios. He served in both their studio and transmitting facilities and

eventually retired from Channel 10 around 1980.

All through these years he was an active amateur, gaining different awards in different fields of communication, and still continuing experimenting with different aspects of his hobby. In 1970, Syd was responsible for the safe completion of the first 8600 mile voyage of the raft "La Balsa" across the Pacific from South America to Australia. The raft's radio equipment malfunctioned approaching Australia and it was Syd's technical knowledge and dedication that enabled them to make their successful landfall.

It was during the last 15 years that he became particularly interested in digital methods of communication and he was in the forefront of many developments in these modes. Much of the original equipment that was used was ex-surplus disposals and, with his knowledge and expertise, he developed new ideas.

He was one of the foundation members of the Australian Amateur Radio Teleprinter Society and was a regular participant in many contests. He furthered and encouraged younger members of the amateur fraternity to become active amateurs in the digital modes. He was known throughout the world for his radioteletype DX notes. Although he gave the origin of these notes to overseas amateurs, they are still sent worldwide weekly and known as the "VK2SG DX Notes". They even now appear on the new super highway, the Internet.

Syd has many amateur friends around the world who remember him fondly and

miss seeing that VK2SG callsign on their screens. Syd's pioneering in amateur radio has given many thousands of people around the world a lot of pleasure.

Bill Storer VK2EG

Bill Cavanagh VK2WC

Bill Cavanagh VK2WC of Wauchopo passed away suddenly on Sunday, 19 November 1995.

Gaining of his first amateur call sign A3WC in 1925 marked the beginning of Bill's long experience and participation in the developments and practices of communication technology.

In addition to being a prominent figure in the amateur radio fraternity, Bill was also a

champion swimmer. He gained State championship titles in the Victorian Swimming Association during his swimming career over the years 1922-1932. He was also a prominent surf board rider in the days of the "long boards".

Historical records of the Goulburn Amateur Radio Society show that in 1926 he was the broadcast engineer at the commercial radio station 2GN and was also an active member of the small amateur radio group at that time.

Bill served as a Signals Officer in the RAAF during WW2 and later settled in Wauchopo. Here he operated a Radio and Electrical Business until his retirement in 1972.

He was an Honorary Life member of the Oxley Region Radio Club at Port Macquarie.

His home constructed Quad was something of a land mark spreading his foot print far and wide. He became widely known throughout the world and kept many regular schedules with old friends.

A guard of honour was formed by ex members of the Armed Services and the Amateur Fraternity who attended the service to honour this well known and respected member of the community. Bill was laid to rest in Wauchopo Cemetery on Thursday, 23 November 1995.

Pete Alexander VK2PA for Oxley Region Amateur Radio Club.
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Ionospheric Update

Evan Jarman VK3ANI*

Solar Cycle 23

On 15 May last year, helio-seismology equipment at Learmonth observatory recorded areas of reverse magnetic polarity. They were at higher latitudes, indicating the beginnings of a new solar cycle.

Each solar cycle can be considered separately to others. It is not a continuous oscillation in activity. A new cycle can be observed while activity is governed by the "old cycle", the current situation. It usually takes 12 to 20 months before the rise in activity of a new cycle exceeds the decline in activity of the old cycle. This is when a turn around in radio related activity will be seen. Ionospheric Prediction Service T index data last put this turn-around at mid 1996.

The T Index

Currently the HF predictions are using the IPS T index. The T index should be considered as an "equivalent sunspot number", one that best matches the

activity as observed by ionosondes. The maximum useable frequency (MUF) is measured by an ionosonde, effectively an ionospheric echo sounder.

Ionospheric conditions are affected by more than solar activity, for instance geomagnetic activity. EUV radiation, which actually produces the ionosphere, does not vary exactly with the sunspot number.

The T index bears an undefined resemblance to the sunspot number but better matches observed ionospheric activity. The graph demonstrates how recorded sunspot numbers match the T index and shows how the T index is predicted to change.

ALF, MUF and OWF

The HF predictions currently show the diurnal variation of three key frequencies. They are:-

ALF Absorption limiting frequency. Frequencies below this limit are expected to be absorbed in the atmosphere. The absorption is due to ionisation and shows

a very distinct rise and fall matching sunrise and sunset on the path. This limit dominates the others; if the plotted ALF rises above the other plotted frequencies, then radio communication on this circuit is unlikely.

MUF Maximum useable frequency. Corresponds to the highest reflected frequency expected. It is essentially the foF2 recorded by ionosondes. It is not the highest frequency for communications as most signals approach the ionosphere at an angle. The probability of communications at this frequency is expected to be 50%.

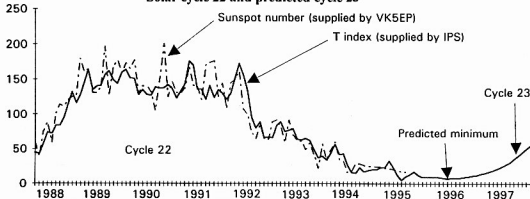
OWF Optimum working frequency. Also called the frequency of optimum travail (FoT). This is the frequency most likely to result in successful communication. For best communication, pick a time at which the OWF matches the required, or available, band. The probability of communications at this frequency is 90%.

Please remember, they are predictions based on expected activity and conditions do vary.

*C/o PO Box 2175, Caulfield Junction VIC 3161

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Solar cycle 22 and predicted cycle 23



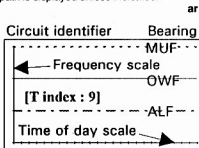
HF PREDICTIONS

Evan Jarman VK3ANI

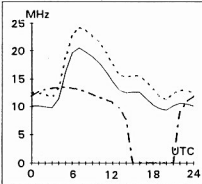
The Tables Explained

These charts were prepared using one of the IPS stand-alone prediction systems. They show the diurnal variation in ionospheric conditions. The legend below indicates how each of the frequencies is plotted.

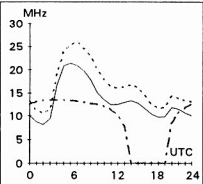
Those frequencies are:-
ALF Absorption limiting frequency
MUF Maximum useable frequency
OWF Optimum working frequency
The T index used is shown in the legend.
Also included is the path bearing for the Australian station of each circuit. The short path is displayed unless indicated.



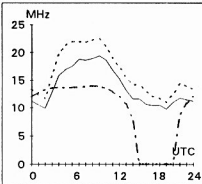
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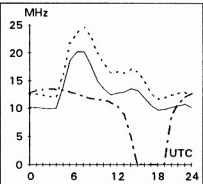
Brisbane-Cairo 288



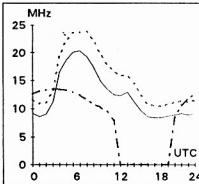
Adelaide-Harare 245



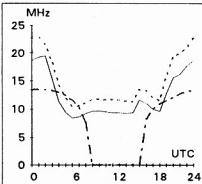
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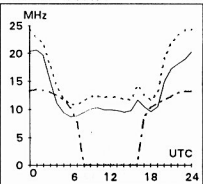
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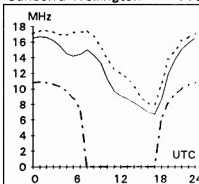
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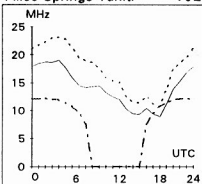
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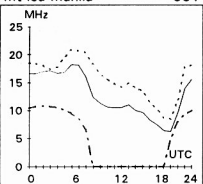
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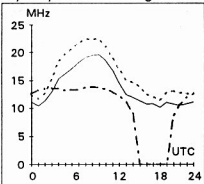
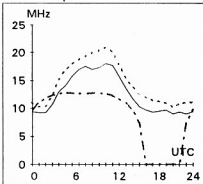
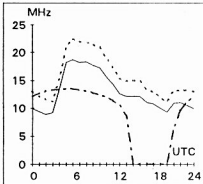
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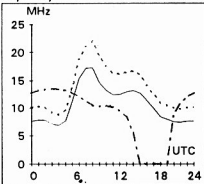
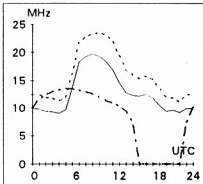
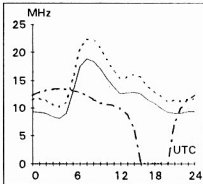
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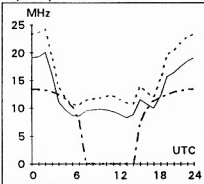
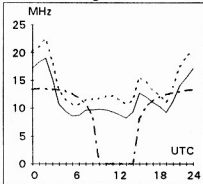
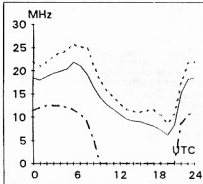
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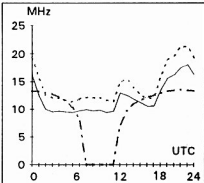
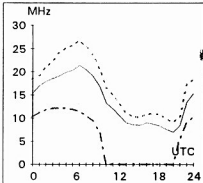
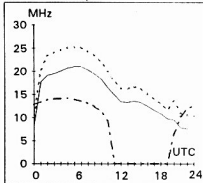
Melbourne-London 311 Perth-London 313 Sydney-London 319



Melbourne-New Delhi 306 Perth-Los Angeles 72 Sydney-San Francisco 56



Darwin-Tokyo 10 Perth-Seoul 9 Hobart-New York 80



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FOR SALE VIC

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FOR SALE SA

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WANTED NSW

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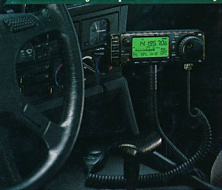
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